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ABSTRACT

This study presents an intensive comparative analysis of selected basic sentence patterns and transformations in Spanish and English manifested in the responses of Spanish-speaking disadvantaged children selected to receive instruction in the following groups: (1) Oral-Aural Spanish with special science materials in Spanish; (2) Oral-Aural English with science in English; (3) Non-Oral-Aural in Spanish or English, but the same science materials as OAS and OAE; and (4) Non-Oral-Aural No-Science, which followed regular public school curriculum. To obtain these responses, at the beginning and end of the first grade, the first section of the Language-Cognition Test was given twice, in both Spanish and English. (An ancillary task of the investigation was to field-test the first section of this test.) The hypotheses of this study, designed to test for similarities and differences in the oral language of the four groups, were that (1) there were no significant initial differences between groups, including sex, in pretest scores; and (2) there were no significant differences between group means and function of treatment. In general, these hypotheses were "supported by the results." (AMM)

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A Comparative Study of

Syntactical Structures of the Oral Language Status in Spanish and English of Disadvantaged First-Grade Spanish-Speaking Children

Albar A. Peña

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The San Antonio Language Research Project

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A COMPARATIVE STUDY OF SELECTED SYNTACTICAL STRUCTURES OF THE ORAL LANGUAGE STATUS IN SPANISH AND ENGLISH OF DISADVANTAGED FIRST-GRADE SPANISH-SPEAKING CHILDREN

by

ALBAR ANTONIO PEÑA, B.S. in Ed., M.A.

DISSERTATION
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for the Degree of

DOCTOR OF PHILOSOPHY

THE UNIVERSITY OF TEXAS AT AUSTIN
August, 1967

PREFACE

This study of Albar Antonio Peña is concerned with assessment of the status of the syntactical structures in oral language possessed in Spanish and English by primary school beginners. The study was conducted in conjunction with the San Antonio, Texas, Language Research Project, with the support, during the 1966-1967 school year, of Title I funds and funds provided by the Research and Development Center for Teacher Education, College of Education, The University of Texas at Austin.

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For their cooperation in collecting data for this study, the author espresses his appreciation to the administrators and teachers in J. T. Brackenridge, Raymond H. Brewer, Esther Perez Carvajal, Ira Ogden, and Sarah King Elementary Schools of the San Antonio Independent School District, and to Mr. Raymond Arnold, Assistant Superintendent, Elementary Division, for facilitating the work of this study. The author also expresses his appreciation to Dr. Anne O. Stemmler for allowing him to use the first section of the Language-Cognition Test.

For her understanding, encouragement, and assistance, the author expresses his warmest gratitude and sincere appreciation to his wife Englantina. And finally, the author expresses thanks to his daughter Bianca for her mature understanding and cooperation.

A. A. P.

The University of Texas at Austin
July, 1967

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CHAPTER I

PURPOSE OF THE STUDY

At the present time little information can be located in the research which gives a true indication of the status or extent of the basic oral language development that disadvantaged first-grade Spanish-speaking children possess in either Spanish or English. Therefore, it is hoped that the findings secured from this study will contribute to the solution of the problems faced by Spanish-speaking children entering school every year. Information of this type should be valuable in assessing and refining programs currently in operation in order to meet the needs of these children. Furthermore, such information should be valuable in planning new programs or new instructional areas in existing programs for disadvantaged Spanish-speaking children.

As an illustration of the many people who could directly or indirectly be affected by the information secured in this study, one has only to consider the vast numbers of Spanish-surname people who live in the United States. A 1966 population estimate indicated that there are now approximately from 8,000,000 to 10,000,000 people of Spanish surname living in the United States and of those, 5,000,000 to 6,000,000 live in the Southwestern states alone.[1] The majority of these people are native speakers of Spanish who live and work in an English-speaking environment, and because of their low incomes and cultural separateness, they are ordinarily classified as culturally disadvantaged.[1] The term "culturally disadvantaged" here refers to anyone who is prevented, for whatever reason, from participating fully in the dominant culture, i.e., usually the white middle class.[2]

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[1] Newsweek, May, 1966, p. 32.

Statement of the Problem

This study intends to ascertain the status of some of the syntactical structures in the oral language development in Spanish and English of four groups[3] of disadvantaged Spanish-speaking children in San Antonio, Texas, during their first year in school. Specifically, this study will focus upon an intensive comparative analysis of some basic sentence patterns and fundamental transformations in Spanish and English manifested in the responses of the subjects at the beginning and at the end of the first grade.

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[1] Walter Fogel, "Education and Income of Mexican-Americans in the Southwest," Advance Report 1, sponsored by Division of Research, Graduate School of Business Administration, University of California, Los Angeles, 1965, p. 3.

[2] N.C.T.E., "Language Programs for the Disadvantaged," Report of the National Council for Teachers of English Task Force, National Council for Teachers of English, Champaign, Illinois, 1965, p. 236.

[3] These groups were selected from a research sample involved in an experimental program comparing the effectiveness of three methods of developing reading readiness in Spanish-speaking children in the first grade. The research is being conducted in San Antonio, Texas. For the purpose of the experimental program, the research sample has been divided into four groups, e.g., OAS (group receiving intensive oral language development in Spanish and using science materials), OAE (group receiving intensive oral language development in English and using science materials), NOA (group not receiving intensive oral language development in English or Spanish, but using same science materials), and NOA-NS (this group uses neither the special science materials nor intensive oral language development—they follow the "regular" curriculum as prescribed by the San Antonio Independent School District.

An ancillary purpose of this investigation is to ascertain the usefulness of a new testing instrument purporting to measure basic language development both in Spanish and English.

Background of the Problem

The design of this study is based upon recent research and writing in two related areas, namely educational disadvantagedness in primary-grade Spanish-speaking children and in oral language development. While it is possible to consider these two areas separately, this study requires that they be treated in an interrelated way because of the deep effect one has on the other. The interrelationship of the two areas, disadvantagedness and oral language development, is clearly revealed in the results which are available in the most recent research concerning disadvantaged Spanish-speaking children. Hence, in the following presentation of the research and writings from which the problem was formulated, these two areas will be combined. This research is reviewed in Chapter II.

In an overview of a research project conducted in Texas, Stemmler noted that the majority of the six-year-old Spanish-speaking children who enter the first grade each year in the public schools of Texas are faced with two major problems. These problems are, first, the language barrier; and second, disadvantagedness.[1] The language of instruction in Texas public schools is English. In most instances, these Spanish-speaking children enter the English-speaking schools as "monolinguals"; their native language is Spanish. Hence, they are immediately and seriously handicapped owing to a language barrier.

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[1] Anne O. Stemmler, "An Experimental Approach to the Teaching of Oral Language and Reading," Harvard Educational Review, 36 (Winter, 1966), 42-59.

A 1962 report of the Preschool Program for Non-English Speaking Children stated that the failure rate of Spanish-speaking children in the first grade without any preschool instruction in English was 82 percent.[1] Major reasons given for this failure were the inability to use English, poor attendance, and inability to read adequately.

In addition to the language barrier, there is the second barrier of disadvantagedness which is not always accounted for, but which is just as debilitating. For example, in a study conducted in 1964-1965 by Horn (in which this experimenter participated), it was found that disadvantagedness was, indeed, a major barrier. At the beginning of this study, results from tests administered at that time revealed that the Spanish-speaking children included in the research sample did as poorly on tests administered in their native language as they did when the tests were administered in English.[2] These results clearly indicated that there were two barriers involved, namely, language and disadvantagedness. In addition to the test results, the following striking inadequacies of Spanish-speaking children with regard to the barrier of disadvantagedness were observed both informally and through testing during the first weeks of the research:

> (1) lack of experiential background for the types of tasks appearing in tests; (2) minimal attention span; (3) minimal auditory and visual discrimination; (4) apparent lack of information (even when using their native language on

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[1] Texas Education Agency, The Preschool Instructional Program for Non-English Speaking Children, Texas Education Agency, Austin, October, 1962, p. 10.

[2] Thomas D. Horn, A Study of the Effects of Intensive Oral-Aural Spanish Language Instruction, Oral-Aural English Language Instruction, and Non-Oral-Aural Instruction on Reading Readiness in Grade One, The University of Texas at Austin, 1966, pp. 52-55.

topics which were presumably familiar to them); and (5) inadequacy in such cognitive tasks as classifying objects and following a sequence of test directions even when administered in Spanish.[1]

Horn's current research study is seriously concerned with attacking both the barriers of language and disadvantagedness. Although this research was begun for the purpose of comparing and contrasting three different methods of developing readiness for reading for Spanish-speakers, its scope soon grew to encompass the two areas noted above, i.e., disadvantagedness and oral language development in children. This broadened scope was evidenced by the development of a conceptual framework to interrelate a number of elements for implementing reading readiness.[2]

From this framework, a program was designed for teaching oral language to the disadvantaged Spanish-speaking children included in the research sample. Language became the vehicle for transmitting concepts and cognitive reasoning patterns considered to be vital factors in the achievement of academic success for disadvantaged Spanish-speaking children.

Among the major problems recognized from the outset of Horn's study was the fact that there was no precise way of knowing exactly what these children possessed by way of Spanish oral language development which might be drawn upon for the English language development and reading programs in the schools.[3]

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[1] Anne O. Stemmler, "What Have We Learned about Teaching Reading to Spanish-Speaking Children?" Unpublished speech presented at the International Reading Association Convention, Dallas, Texas, 1966 (Mimeographed), p. 5.

[2] Anne O. Stemmler, "Organizing Elements for Instructional Program in Oral Language for U.S.O.E. #2648," unpublished conceptual framework, Austin, Texas, 1964 (Mimeographed), pp. 1-3.

[3] _Op. cit._, p. 2.

While the test measures indirectly provided some indication of oral language abilities, there was no objective way of assessing the levels at which the children were actually functioning. However, from the indirect evidence that was secured, it seemed apparent that in all probability the levels of oral language development in these children were extremely low. Hence, the problem of trying to ascertain the critical facets of oral language development prior to and after completion of the academic year still remains. A comprehensive analysis of all critical facets of oral language development would have to include a thorough phonological, morphemic, and syntactic study. However, because of the primacy of syntax in current linguistic thinking,[1] this study focuses only on several aspects of the relevant syntax problems, namely, some basic sentence patterns and some fundamental transformations. This information, had it been available, would have provided a sounder basis for the expansion of the experimental program than was possible earlier.

While not being conducted as research, other programs have been in operation in Texas which attempted to develop and implement suitable programs for this very considerable segment of the Spanish-speaking population. Specifically, these programs are: The Preschool Instructional Program for Non-English Speaking Children (1960) and the Texas Project for Migrant Children (1962). The Preschool Program, like The University of Texas-sponsored study, has been aimed at developing oral language as a critical feature of reading readiness.[2] The Migrant

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[1] Noam Chomsky, Aspects of the Theory of Syntax, M.I.T. Press, Boston, Massachusetts, 1965, p. 25.

[2] Texas Education Agency, The Preschool Instructional Program for Non-English Speaking Children, Texas Education Agency, Austin, October, 1962.

Project is a six-month extended program for migratory children providing the equivalent of a full year of instruction while the children are on "home base."[1]

The types of test results shown for these programs, i.e., scores on teacher-made and Scholastic Achievement Readiness Tests, reveal that direct objective information relating to the actual levels of oral language development possessed by disadvantaged children is not yet available. For the Preschool Program and the Migrant Project, only indirect evidence of development in these two areas has been secured. For example, the consistently below-average achievement in reading shown by Spanish-speaking children suggests, indeed, the presence of oral language disability and disadvantagedness.

In summarizing the available background of information leading to the problem of this investigation, some current findings have been described concerning disadvantaged Spanish-surname children.[2] These findings were presented to demonstrate: (1) the barriers faced by these children in an English-dominated middle-class school environment; (2) areas critical for academic learning, e.g., aspects of oral language development and disadvantagedness; and (3) the critical necessity for securing objective evidence of the status of oral language development in these children in both Spanish and English.

Definition of Terms

The following definitions are essential for understanding the major problems and the specific hypotheses which are to be generated from this study. These definitions are noted below:

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[1] Texas Education Agency, The Texas Project for Migrant Children, Texas Education Agency, Austin, September, 1964.

[2] *Op cit.*, p. 7.

1. Basic sentence patterns.—This term is defined as the arrangement of words, for the most part unconsciously, into patterns. According to Stageberg,[1] and Stockwell, Bowen, and Martin,[2] both English and Spanish use a limited number of basic sentence patterns. Any other sentence in the language is based on one of these patterns—these writers termed the basic sentence patterns as "kernel sentences,"[3] viewing them "as grammatical patterns consisting of SLOTS, each of which is a place in the pattern at which substitutions of various appropriate lexical units can be made." This study will utilize the six basic sentence patterns (see Appendix E) in English and Spanish as prescribed by Stockwell, Bowen, and Martin.

2. Fundamental transformations.—This term is defined as some of the changes that may occur in the basic sentence patterns in the form of utterances, such as declarative to interrogative, affirmative to negative, imperatives, and so on.[4]

3. Experimental program.—This program consists of intensive instruction in oral language, in Spanish and English,

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[1] Norman C. Stageberg, An Introductory English Grammar, Holt, Rinehart and Winston, Inc., New York, 1965, p. 168.

[2] R. P. Stockwell, J. D. Bowen, and J. W. Martin, The Grammatical Structures of English and Spanish, University of Chicago Press, Chicago, 1965, p. 25.

[3] Recent developments in transformational grammar prefer now to distinguish between phrase-structure strings and transformational strings rather than kernel sentences and transformational sentences.

[4] Stockwell, Bowen, and Martin, *op. cit.*, pp. 347-383.

for one hour a day using audio-lingual techniques based on science materials for two groups (OAS and OAE). The intensive instruction in oral language received by these two groups replaced readiness instruction of one hour rather than in addition to such time allotment. Another group (NOA) used the same science materials but without the audio-lingual instruction. This was considered the "regular" science time allotment rather than reading readiness. In addition to the treatments noted above, a fourth group, referred to as NOA-NS, was included which used neither the special science materials nor the audio-lingual techniques. This group proceeded as usual using locally adapted basal reading series (Ginn). The groups (OAS, OAE, NOA, and NOA-NS) noted above will be further explained below.

4. Group I, Oral-Aural Spanish.—Intensive experimental program in oral language development in Spanish (using science materials with audio-lingual techniques), hereafter referred to as OAS.

5. Group II, Oral-Aural English.—Intensive experimental program in oral language development in English (using science materials with audio-lingual techniques), hereafter referred to as OAE.

6. Group III, Non-Oral-Aural.—No special experimental program in oral language development in English or Spanish, but using same science materials as Groups I and II above, hereafter referred to as NOA.

7. Group IV, Non-Oral-Aural-No Science.—This group is composed of a sample population of pupils from grade one selected from several classes in one of the random schools serving as control groups in the experimental program. Teachers of these classes use neither the intensive oral language development based on special science materials nor audio-lingual techniques. This group is hereafter referred to as NOA-NS.

Hypotheses

The major problem of this study is to ascertain the status of oral language development in Spanish and English of four groups of disadvantaged Spanish-speaking children during their first year in school. Specifically, this study will consist of an intensive analysis of some basic sentence patterns and fundamental transformations in Spanish and English manifested in the responses of the subjects at the beginning and at the end of the first grade. An ancillary problem of this investigation is to ascertain the usefulness of a new testing instrument purporting to measure basic language development both in Spanish and English.

Developing from the major and ancillary problems are the following hypotheses, in question form, which are concerned with pre-testing in the fall as compared to post-testing in the spring after subjects have been in the first grade one year. The questions are as follows:

1. Are there significant initial differences between groups, including sex, in pre-test scores?
2. Are there significant differences between group mean gains as a function of treatment?

Design of the Study

Subjects

The subjects for this study will be first-grade beginners selected from several predominantly Spanish-speaking schools in San Antonio, Texas, meeting the criterion of 90 percent or more Spanish-speakers in their populations. These schools are located in generally the same urban geographical area, and the school population for the most part represents the most economically disadvantaged group in the metropolitan area.

For the purpose of this study, a sample of first-grade pupils will be selected using a list of random numbers,[1] from five schools in this area. The five elementary schools to be included are: J. T. Brackenridge, Raymond H. Brewer, Esther Perez Carvajal, Ira Ogden, and Sarah King. The sample will include 88 Spanish-surname pupils from 23 classes selected on the basis of the criteria noted below. No Anglo-American students are to be included. The sampling unit will be the student.

The subjects selected for the four types of groups involved, OAS, OAE, NOA, and NOA-NS, will be chosen using the following criteria:

1. That each subject is a native speaker of Spanish, i.e., his mother tongue or first language is Spanish;
2. That each subject should be enrolled in one of the schools within the poverty area described above;
3. That each subject should be enrolled in the first grade for the first time;
4. That each subject be considered to be disadvantaged according to the criteria defined by Havighurst[2]— a disadvantaged child is one who: (1) is at the bottom of the American society in terms of income; (2) suffers from social and economic discrimination by the majority of the society; (3) is widely distributed in the United States, mostly in large cities, but not in very high income communities. This

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[1] Wilfrid Dixon and Frank Massey, Introduction to Statistical Analysis, McGraw-Hill Book Company, Inc., New York, 1957, pp. 366-371.

[2] Robert Havighurst, "Who Are the Disadvantaged?" Education, 85 (April, 1965), 455-457.

includes Negroes, Puerto Ricans, Mexican-Americans, European immigrants, and white people from rural southern communities in large numbers. In these racial and ethnic terms, they are equally divided between whites and non-whites.

5. That each of the four groups should contain an equal number of boys and girls.

The teacher variable will be controlled in part by initially randomizing the selection of students from twenty-three classrooms involved in the experimental program. Eight classes involving three groups (OAS—10 subjects, OAE—8 subjects, and NOA—9 subjects) were selected from J. T. Brackenridge; six classes (22 subjects) involving only students in the fourth group (NOA-NS) were selected from King; three classes involving three groups (OAS—6 subjects, OAE—4 subjects, and NOA—4 subjects) were selected from Carvajal; four classes involving three groups (OAS—6 subjects, OAE—4 subjects, and NOA—9 subjects) were selected from Brewer; and two classes involving only OAE groups (3 subjects from each) were selected from Ogden.

The variable of method of instruction is controlled by having an equal number of students selected randomly from each of the four groups in the experimental program.

The variable of intelligence will be used as a co-variable. It will be treated in the statistical design as a co-variable using a regression design.

The variables of sex and group will be initially controlled by randomization and used as independent variables in the statistical design.

The teacher variable will be controlled in part through the randomization of the students.

Instrumentation of the Study

For analysis purposes the following instruments will be used:

1. Pre-test instruments (September 1966)

Pupils in each of the OAS, OAE, NOA, and NOA-NS groups in the five schools selected will be given the first section, "Spontaneous Language," of the Language-Cognition Test (LCT)[1] in its Spanish and English forms. This is a proposed measure of the language and cognitive status of school beginners in an informally structured testing situation. Also an intelligence test, the Goodenough-Harris Draw-A-Man Test, and the Inter-American Test of General Ability (English and Spanish forms), a test of reading readiness, will be administered.

2. Post-test instruments (April 1967)

The first section of the Language-Cognition Test will again be administered in its Spanish and English forms. The Inter-American Test of Reading, English and Spanish forms, will also be administered.

Proposed Data Analyses

A factor analysis will be done on the responses obtained from the "Spontaneous Language" section of the Language-Cognition Test to reduce the number of linguistic variables. The factor scores will then be computed and an analysis of variance done on these scores using I.Q. as a covariable.

A regression analysis (covariance) will be used for data collected (LCT factor scores and I.Q. scores) during the pre-testing in the fall trying to answer the following question:

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[1] Anne O. Stemmler, "The LCT, Language-Cognition Test," Research Edition (Mimeographed), Austin, Texas, 1967, pp. 1-2.

1. Are the differences between groups in LCT factor scores the same for all groups throughout the range of I.Q.?

After testing Hypothesis 1, the Double Classification with Repeated Measurement Analysis of Variance[1] will be used to analyze data collected during the pre- and post-testing and answering the following question:

2. What are the differences between groups at pre-testing and post-testing?

The following comparisons are to be done using the double classification analysis noted above:

a. T x G — (Time x Group) Are the differences between T_1 (pre-testing) and T_2 (post-testing) the same for each group collapsing over sex and administration?
b. T x S — (Time x Sex) Are the differences between T_1 and T_2 the same for each sex collapsing over group and administration?
c. T x G x S — (Time x Group X Sex) Are the differences between T_1 and T_2 the same for each group-sex combination?

For Hypothesis 1 the following comparisons will be done:

LCT factor scores with I.Q. scores obtained from Goodenough-Harris to determine if the regression of the LCT factor scores on I.Q. is the same for each group.

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[1] E. F. Lindquist, Design and Analysis of Experiments, Houghton Mifflin, New York, 1953, p. 322.

For Hypothesis 2 the following comparisons will be done:

LCT factor scores of all groups during pre- and post-testing will be compared to determine if there are any differences between testing times as a function of treatment and sex.

CHAPTER II

REVIEW OF THE LITERATURE

The purpose of this chapter is to present the research and theory which contributed to the formulation of the hypotheses and the methods and procedures for the present study. Specifically, this chapter focuses upon the related research and theory from two areas: oral language development in young children (specifically, Spanish-speaking disadvantaged children) and second-language learning.

Language Characteristics of Spanish-speaking Children

The subjects for this study were disadvantaged Spanish-speaking children entering the first grade for the first time. Typically, these children are said to be quite deficient in their speaking ability in whatever language they possess.

Manuel, in describing the language of Spanish-speaking children, makes the generalization that their home language is a poor grade of Spanish.[1] His statement would appear to be based on the fact that most primary-age Spanish-surname children lack an extensive vocabulary and when speaking will mix the words in Spanish with those borrowed from English. Manuel further states that even the fund of ideas which words express is limited. In their homes they lack the opportunity and stimulus to develop the concepts which other children normally develop. Stemmler's review of Horn's language research project in San Antonio, Texas, reaffirms this generalization by stating that the intensive oral language instruction in Spanish utilized in his study was included to develop standard Mexican Spanish in place of limited local dialects.[1]

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[1] Herschel T. Manuel, Spanish-Speaking Children of the Southwest, University of Texas Press, Austin, 1965, p. 117.

Disagreeing in part with the above contention is a report made by the Southwest Council of Foreign Language Teachers which states:

> It is true that there are regional variations from the standard Spanish of Mexico, notably the archaistic remnants in northern New Mexico and the "pachuco" argots of some cities, and there is widespread recourse to lexical borrowing from English. What matters is determining school procedures in the extent to which the "deep grammar"[2] and the sound system vary from the standard. The judgment for each locality can best be made by a specialist in descriptive linguistics who speaks Spanish very well.[3]

Christian and Christian report that:

> This distribution of the Spanish-speaking naturally has led to the development of a somewhat different use of Spanish in various locations. Archaic Spanish is most common in the upper Rio Grande valley and southern Colorado, while the use of a *caló* by the *pachuco* of the juvenile gangs is common to the slums of the cities like El Paso, Albuquerque, Los Angeles, Phoenix, Tucson, and so

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[1] Anne O. Stemmler, "An Experimental Approach to the Teaching of Oral Language and Reading," Harvard Educational Review, 36 (Winter, 1966), 45.

[2] The term "deep grammar" means in this context "the fact that children who enter school at age six are 'naive experts' who have consciously acquired command over all the basic patterns of the language and have a vocabulary that may run as high as 24,000 words."

[3] Charles Stubing (Ed.), Bilingualism, Reports by the Third Annual Conference of the Southwest Council of Foreign Language Teachers, El Paso, 1966, p. 20.

on. Very little variation in this speech has developed from city to city—a rather surprising uniformity which, with other factors, seems to indicate that there has been considerable communication among members of this group. Simple, rural Mexican Spanish, with slight variations, depending on the section of Mexico in which a given sub-group or individual was native, has been characteristic of *campesinos* who arrived in the Southwest within the last generation or so. This has always been typical of the Spanish of the lower Rio Grande valley, for example. The majority of Spanish speakers who have arrived in the Southwest since the turn of the century have come from the Mexican states of Nuevo León, Coahuila, Sonora, Durango, and others of the central plateau.

Since the 1840's many English words and Anglicized Spanish expressions have been adopted by Spanish speakers throughout the Southwest. Most of these words and expressions refer to items foreign to the Spanish-speaking and therefore, not previously included in their language. Among more acculturated Spanish speakers, there frequently has developed a mixture of Spanish and English involving both lexical and grammatical interference. This is, of course, a strictly oral tradition, like most Spanish in the Southwest, past and present.[1]

With reference to the knowledge of English Spanish-speaking children possess, educators and teachers in general agree that most of them enter school with little or no knowledge of English. Manuel again points out that in most cases even those who have some acquaintance with English use the language with much less facility than do English-speaking children.[2] Many writers, such as Sánchez,[3] Beals,[4] and

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[1] Jane MacNab Christian and Chester Christian, Jr., "Spanish Language and Culture in the Southwest," in Language Loyalty in the United States, Joshua A. Fishman (Ed.). A three-volume report to the U.S. Office of Education, Language Research Section, under Contract SAE-8729, 1964, p. 51.

[2] Manuel, *op. cit.*, p. 110.

[3] George I. Sánchez, Forgotten People. A Study of New Mexicans, University of New Mexico Press, Albuquerque, 1940, pp. 30-32.

[4] Ralph L. Beals, No Frontier to Learning. The Mexican Student in the United States, University of Minnesota Press, Minneapolis, 1957, pp. 21-23.

Burma,[1] who have discussed the Spanish-speaking population of the Southwest also agree with Manuel and cite that, indeed, the English spoken by most Spanish-speaking beginners is inadequate. A 1962 report by the Preschool Program for Non-English Speaking Children also supports this fact by stating that a major reason that these children fail in the first grade is their inability to use English.[2]

Bilingualism

Owing to the fact that some of these children make use of two languages, Spanish and English, they are oftentimes referred to as bilinguals. Bilingualism has been defined by Manuel as simply the use of two languages by the same person or group. It occurs naturally in individual development when a child or adult is exposed to two languages in ordinary social contacts. The more frequent situation is one in which one language is learned in the home and a second language is learned outside. In such cases, the home language may have the substantial advantage in the time when it is begun, in the opportunities when it is begun, in the opportunities for practice, and in the motive for learning.[3] Haugen also claims that in any population that has been exposed to a second language, there will be differences in skill which are purely individual.[4] Weinreich has pointed out another aspect of language skill which may show individual difference, namely, the "switching facility."[1] Haugen asserts that a crucial factor in the kind and extent of bilingualism is the age at which the second language is learned. He delimits the ages of man into infancy, childhood, adolescence, and adulthood. Childhood bilingualism, as he calls it, means the establishment of a second language during the early school years, after the first has been learned in the family.[2] Haugen also states that the general opinion throughout the literature is that this is a favorable period, because the second language will not compete directly with the first and the learner has not yet lost his mental plasticity.[3]

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[1] John H. Burma, Spanish-speaking Groups in the United States, Duke University Press, Durham, North Carolina, 1954, p. 79.

[2] Texas Education Agency, *op. cit.*, p. 9.

[3] Manuel, *op. cit.*, pp. 98-100.

[4] Einar Haugen, Bilingualism in the Americas: A Bibliography and Research Guide, published by the American Dialect Society, University of Alabama Press, 1956, p. 71.

Lambert and his associates at McGill University report that in their studies on bilingualism, the first step was to develop a means of measuring individual variations in bilingual skills.[4] This work assumed that linguistic habits revealed in tests calling for speed of response would be accepted as habits of strength. It was hypothesized that students with different amounts of study experience in a second language should show a corresponding facility in responding with the second language when required to. It was found that students at three progressively more advance stages of experience with French showed progressively greater speed of responding to directions given them in French. The speed of response measure correlated highly with active vocabulary in

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[1] Uriel Weinreich, Languages in Contact, Findings and Problems. Mouton and Company, New York, 1964, pp. 73-74.

[2] Haugen, *op. cit.*, pp. 72-73.

[3] *Ibid.*, p. 73.

[4] W. E. Lambert, "Measurement of the Linguistic Cominance of Bilinguals," Journal of Abnormal and Social Psychology, 51 (June, 1955), 50.

French. Lambert also discovered that one's degree of bilingualism is reflected in his ability to perceive and to make efficient use of the words in either language. That is to say, a person can show equal facility in his two languages and yet be comparatively a limited person in both languages.[1]

To determine the degree of bilingualism of a person, psycholinguists, such as Osgood, have distinguished two extreme situations. One is where the two languages constitute a single, "compound" system, and one in which they constitute two "coordinate" systems. The first is typical of school learning, where the student learns a new word and equates its meaning entirely with that of a word in his native language. The second is typical non-school learning, where the learner acquires the new word in actual life situations and associates the word independently with its referents.[2]

However desirable it may be to obtain the level of double fluency, there is need for further study of bilingualism in the United States and uncomplicated by the presence of a mutilated form of English. McCarthy points out that most of the studies are seriously obscured by the factor of socioeconomic status, for most bilingual children either come from highly cultured homes of the upper social levels where the language is being deliberately preserved for cultural reasons, or they come from the lower socioeconomic levels where the parents have not been sufficiently intellectual to acquire the second language. On the other hand, there are a number of children whose parents remain in lower socioeconomic brackets than those in which they would be found in their native countries because the very fact of a language handicap has necessitated their remaining at manual occupations rather than undertaking more verbal or more intellectual tasks.[1] Hoffman adds that the ability to use any language should be considered a continuum varying from zero to the greatest attainment which the most favored individual can develop. The problem of measuring abilities in two languages is a baffling one in any case and especially so when the situation is complicated by different cultural backgrounds.[2]

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[1] Lambert, *op. cit.*, pp. 197-200.

[2] Charles E. Osgood (Ed.), Psycholinguistics, A Survey of Theory and Research Problems, Indiana University Press, Bloomington, 1965, p. 139.

Cultural and Educational Deprivation

In the present educational system in the United States we find a substantial group of students who do not make normal progress in their school learning. Predominantly these are the students whose early experiences in the home, whose motivation for present school learning, and whose goals for the future are such as to handicap them in schoolwork. This group has been defined by such writers as Havighurst,[3] Reissman,[4] Deutsch,[5] Bloom, Davis, and Hess,[6] and others as being culturally or educationally deprived. In this group, such "in-migrants" to the urban areas as Puerto Ricans, Mexican-Americans, and southern-rural Negroes and whites are included. Deutsch points out that the designation of cultural deprivation should not be equated with membership in an ethnic group, but should be defined in terms of characteristics of the individual and/or the characteristics of his environment.[1] According to Black, the disadvantaged individual may derive from a culture which is rich in its own tradition, but which no longer prepares its members for successful participation in society. The change in economic patterns apparent over the past half-century is considered to be a major cause for this. Black further describes him as "no stranger to failure and to the fear that continued failure engenders. He knows the fear of being overpowered by teachers who are ignorant of the culture and more of his society, and who may not expect success of him."[2]

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[1] Dorothea McCarthy, "Language Development in Children," in Manual of Child Psychology, Leonard Carmichael (Ed.), John Wiley and Sons, Inc., New York, 1954, pp. 592-593.

[2] M. N. H. Hoffman, The Measurement of Bilingual Background, Columbia University, New York, 1934, p. 11.

[3] Havighurst, *op. cit.*

[4] Frank Riessman, The Culturally Deprived Child, Harper and Row, New York, 1962.

[5] Martin Deutsch, "The Disadvantaged Child and the Learning Process," in Education in Depressed Areas, A. H. Passow (Ed.), Teachers College, Columbia University, New York, 1965, pp. 163-179.

[6] Benjamin Bloom, Allison Davis, and Robert Hess, Compensatory Education for Cultural Deprivation, Holt, Rinehart and Winston, Inc., New York, 1965, p. 5.

With specific reference to the cultural deprivation of the Spanish-speaking, Christian and Christian state that:

> Several problems have existed for generations to limit the educational opportunities and achievements of the Spanish-speaking of the Southwest. School segregation, for one reason or another, has continued and . . . has almost inevitably been associated with the continuation of inferior facilities and teaching practices. The schools have consistently failed to give practical training in skills that could raise the socio-economic level of the Spanish-speaking . . .
>
> Furthermore, there have been cultural factors within the Spanish-speaking community which have counteracted the attractions of education. Most Spanish-speakers are of a relatively recent peasant background in which literacy was beyond the realm of need or possibility. Children had to contribute to family income by working in the fields. There was no time for the luxury of schooling in a subsistence agricultural economy. What differentiates the past

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[1] Deutsch, *op. cit.*, p. 165.

[2] Millard H. Black, "Characteristics of the Culturally Deprived Child," The Reading Teacher, 18 (March, 1965), 465.

> generation or so from the early pattern is the entrance of the Spanish-speaking into an urban, industrial economy, in which education is a definite asset to social and economical mobility. Since the early 1900's the Spanish-speaking in the Southwest have become increasingly an urban population and, necessarily, have had to compete for jobs in a situation where the best ones went to the best educated. With rapidly increasing automation in agriculture, even rural life has begun to follow this trend. As a result, the orientation of the Spanish-speaking toward education has slowly undergone a change shaped by an inexorably shifting economy.[1]

Riessman nevertheless suggests that the deprived individual

> is relatively slow at cognitive tasks, but not stupid; appears to learn most readily through a physical, concrete approach; often appears to be anti-intellectual, pragmatic rather theoretical; . . . is deficient in auditory attention and interpretation skills; reads ineffectively and is deficient in the communication skills generally; . . . and may be suspicious of innovations.[2]

It is clear that children do not come to school equally prepared for the learning tasks of first grade. As was pointed out by Bloom, Davis, and Hess,[3] the child from the culturally deprived home comes to school with an interest in the new experiences but without some of the experiences, skills, and values typical of the middle-class child. They compare the culturally advantaged child with the culturally deprived and state the following:

> The culturally advantaged child has been amply rewarded for his previous learning, and he is likely to begin school valuing achievement as a good in its own right. In contrast, the culturally deprived child has difficulty in learning for its own sake and in learning for the approval of an adult. He values things and activities which are concrete and which have immediate and tangible rewards. He has difficulty in seeing the relevance of much of school

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[1] Christian and Christian, *op. cit.*, p. 74.

[2] Riessman, *op. cit.*, p. 76.

[3] Bloom, Davis, and Hess, *op. cit.*, p. 20.

> learning since he is unable to comprehend or accept the deferred and symbolic gratification that the middle-class child has come to accept. As each year goes by the culturally disadvantaged child suffers further frustration and failure . . . until the child becomes alienated from the school program.[1]

According to Niemeyer the first three years of the elementary school are critical. If learning is not successful and satisfying in these years, the entire educational career of the child is seriously jeopardized. The child's interest in school learning, the problems of the school dropout, and the educational career of the individual are largely determined by his home environment and what takes place in the first few years of public school.[2]

Although it can be concluded that a good deal is known about the nature of the learning problems in disadvantaged areas, there are still many questions which remain unanswered and require systematic research efforts. One source of clues to compensatory school efforts which might prove effective can be found through a serious appraisal of the status of oral language development in these children. A recent example of this can be found in the studies conducted by Ott[3] and Jameson.[4]

The above-noted research reveals the aspects of the home environment which seem to be more significant in affecting his school learning. In most general terms these may be described as involving provisions for general learning, models and help in language development, and parental stimulation and concern for achievement and learning on the part of the child.

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[1] *Ibid.*, p. 21.

[2] J. H. Niemeyer, "Home-School Interaction in Relation to Learning in the Elementary School," in The School Dropout, D. Schreiber (Ed.), National Education Association, Washington, D.C., 1964, p. 22.

[3] Elizabeth H. Ott, "A Study of Levels of Fluence and Proficiency in Oral English of Spanish-Speaking School Beginners," Unpublished doctoral dissertation, The University of Texas at Austin, 1967.

[4] Gloria R. Jameson, "The Development of a Phonemic Analysis for an Oral English Proficiency Test for Spanish-Speaking School Beginners," Unpublished doctoral dissertation, The University of Texas at Austin, 1967.

Language Development in Young Children

In her analysis of the research, McCarthy states that the increased interest in language development since 1925 appears to be due the realization of the valuable insights which can be gained into the content of the child's mental life through the study of his linguistic expression. She claims that language, although perhaps not essential for all thinking, is so frequently involved in thought and the communicating to others one's thought processes, that a certain basic level of attainment in linguistic skills is practically an essential prerequisite to the child's formal education.[1] In her analysis of the studies she shows that basic mastery of spoken language is normally acquired very rapidly during the preschool years, usually between the ages of 1 and 5 years. The child whose language development is seriously delayed for any reason labors under an almost insurmountable handicap in his social and academic relationships. The earlier the child can acquire facility in linguistic expression, the sooner he is free to reap the benefits of the use of this valuable tool in all his social and intellectual pursuits.[2] McCarthy concluded that the quality of a child's early linguistic environment is the most important external factor affecting the rate of language development.[3]

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[1] McCarthy, *op. cit.*, pp. 492-494.

[2] *Ibid.*

[3] Dorothea McCarthy, "Child Development: Language,"

Carroll also states that one of the most important preludes to the study of child language development is the scientific description of the adult form of the language the child is learning. It is possible, however, to describe the utterances of the child in scientific terms as constituting the child's idiolect or his own linguistic system. He adds that by the age of about six, the average child has mastered nearly all its common grammatical forms and constructions—at least those used by the adults and older children in his environment.[1]

Nice[2] and Duckworth[3] outline the various stages in sentence formation as follows: (1) the single word stage from 4 to 12 months; (2) the early sentence stage from 13 to 27 months, with an average at 17.5 months, lasting from 4 to 7 months, and characterized by a preponderance of nouns, lack of articles, auxiliaries and copulative verbs, prepositions, and conjunctions; (3) the short sentence stage, which consists of sentences 3.5 to 4.5 words in length and having the same characteristics as the preceding stage, but to a lesser degree; inflections are not yet mastered, and only 1 or 2 sentences out of 50 are compound or complex; (4) the complete sentence stage, which appears at about 4 years and consists of sentences of 6 to 8 words, characterized by greater definiteness and complexity as shown by an increased use of relational words and a fairly good mastery of inflections.

Encyclopedia of Educational Research, Walter Monroe (Ed.), Macmillan Company, New York, 1950, p. 170.

[1] John B. Carroll, "Language Development," in Encyclopedia of Educational Research, Chester W. Harris (Ed.), Macmillan Company, New York, 1960, p. 744.

[2] M. M. Nice, "Length of Sentences as a Criterion of a Child's Progress in Speech," Journal of Educational Psychology, 16 (February, 1925), 370-379.

[3] Roma F. Duckworth, "Semantic Development in Beginning Oral Language: A Case Study," Master's thesis, College of Education, The University of Texas at Austin, 1954, pp. 24-29.

After the age of six there is relatively little in the grammar or syntax of the language that the average child needs to learn, except to achieve a school-imposed standard of speech or writing to which he may not be accustomed in his home environment. Vocabulary learning, however, continues until late in adult life.[1] By the time he arrives at school age, the normal child, according to Noel, has already learned to speak with whatever sound system, grammar, and vocabulary are characteristic of the kind of language he has heard most frequently at home or in his neighborhood. His teachers must ponder the extent to which they can simply build upon his previously acquired capabilities and the extent to which they can attempt to alter a system of habits which not only are highly practiced, but also probably serve a supportive role in the child's adjustment to his non-school environment.[2] Experience indicates that spoken language development should run ahead of the development of competence with reading and writing. That is, at least in the primary grades the child should generally learn language patterns (new words, grammatical constructions, and so forth) in the spoken language before they are introduced in printed form.

Bossard has documented the very wide variations which exist in the role of language in family life[3] and Milner has demonstrated that this variation is associated with children's language performance in the first grade.[4] Since family patterns of behavior vary to considerable extent with socioeconomic status, one can easily account for the findings of Templin and others that language development is faster in the upper socioeconomic levels.[1]

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[1] Carroll, *op. cit.*, p. 748.

[2] Doris I. Noel, "A Comparative Study of the Relationship Between the Quality of the Child's Language Usage and the Quality and Types of Language Used in the Home," Journal of Educational Research, 47 (June, 1953), 161-167.

[3] James H. Bossard, The Sociology of Child Development, Harper and Row, New York, 1954, p. 37.

[4] Esther Milner, "A Study of the Relationship Between Reading Readiness in Grade One School Children and Patterns of Parent-Child Interaction," Child Development, 22 (October, 1951), 95-112.

While the preceding studies on child language development have used an approach which focuses on sentence structures, another approach that can be used focuses upon vocabulary. McCarthy reports that the studies of vocabulary may be grouped into several types: (1) estimates of total vocabulary at specified ages (usually of single children); (s) analyses of total vocabularies according to parts of speech; (3) analyses of total vocabularies for subject matter; (4) analyses of the occurrence of the various parts of speech in compositions; (5) estimates of total vocabularies of groups by the use of the free association technique; (6) word frequency counts; and (7) estimates of total vocabularies by the use of vocabulary tests. The vocabulary tests have all been devised by employing different methods of sampling, so that serious methodological problems are raised. Some of the tests require the actual eliciting of the words, whereas others involve merely pointing to pictures and thus reveal only understood vocabulary.[2] Horn's vocabulary list known as the International Kindergarten Union List contains the words actually used orally by children before entering the first grade.[3] Duckworth also made a study of the oral vocabulary used by a preschool child. She sampled what she called the "complete vocabulary" spoken by the child, i.e., those words without meaning; words with one meaning; and words with two or more meanings.[1]

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[1] Mildred C. Templin, Certain Language Skills in Children: Their Development and Interrelationships, University of Minnesota Press, Minneapolis, 1957, p. 179.

[2] McCarthy, *op. cit.*, p. 526.

[3] M. D. Horn, "The Thousand and Three Words Most Frequently Used by Kindergarten Children," Children Education, 3 (April, 1928), 180-182. Also known as the International Kindergarten Union List.

McCarthy concludes that still another approach to measuring a child's general stage of language development is determining the mean sentence length. She considers this approach to be the most reliable, easily determined, objective, quantitative, and easily understood measure of linguistic maturity.[2] McCarthy further adds that persons interested in children's language development have been concerned not only with the quantitative approach in terms of length of responses, but have also attempted some form of qualitative analyses to reveal the improvement in sentence structure which takes place as the child develops. Emphasis has been placed on sentence structure because of the necessity of guiding children's writing and because of the role of grammar in the school curriculum.[3] Agreeing with McCarthy's statements, Symonds and Daringer note that:

> Sentence structure in a language is a key to the logic and structure of thinking, inasmuch as the sentence is the smallest complete unit of thought. Growth in the power to form complete, concise, balanced, consistent sentences is an index of the growth in clear thinking.[4]

The research cited above suggests an urgent need for securing examples of the dynamics of language development among children from different socioeconomic, and hence different verbal, milieus.

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[1] Duckworth, *op. cit.*, p. 25.

[2] McCarthy, *op. cit.*, p. 527.

[3] *Ibid.*, p. 551.

[4] P. M. Symonds and H. F. Daringer, "Studies in the Learning of English Expression," and "Sentence Structures," Teacher College Record, 32 (May, 1930), 50.

Language Development and Second Language Learning in the Disadvantaged Child

There have been a number of studies which have compared the language development of disadvantaged children with that of a more favored group. Studies, such as those done by Templin[1] and Loban,[2] have attempted to yield a descriptive account of the language of disadvantaged children. Both these studies show that in such characteristics as sentence length, word variety, and the use of various grammatical categories and constructions, the language of disadvantaged children resembles that of other more favored children at a lower age level.

As the linguist Chomsky has pointed out, however, descriptive studies of the kind referred to above do not really tell us what a child can do with language. A certain grammatical construction may not appear in a sample of a child's speech, and yet he may be fully capable of understanding and using it when the need arises. Conversely, a certain term or construction might appear, but the child's use of it might be so restricted to a few special cases that it would be misleading to credit him with mastery of it.[3] Chomsky goes on to say that:

> If anything far-reaching and real is to be discovered about the actual grammar of the child, then rather devious kinds of observations of his performance, his

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[1] Templin, *op. cit.*, p. 179.

[2] Walter D. Loban, The Language of Elementary School Children, No. 1 in a series of Research Reports sponsored by the National Council of Teachers of English Committee on Research, Champaign, Illinois, 1963.

[3] Noam Chomsky, "The Development of Grammar in Child Language," Discussion by W. Miller and Susan Ervin, Society for Research in Child Development Monographs, No 29, 1964, pp. 35-39.

> abilities, and his comprehension in many different kinds of circumstances will have to be obtained, so that a variety of evidence may be brought to bear on the attempt to determine what is in fact his underlying linguistic competence at each stage development.[1]

Deutsch asserts that in order for a child to handle multiple attributes of words and to associate words with their proper referents, a great deal of exposure to language is presupposed. Such exposure involves training, experimenting with identifying objects and having corrective feedback, listening to a variety of verbal material, and just observing adult language usage. Exposure of children to this type of experience is one of the great strengths of the middle-class home, and concomitantly represents a weakness in the lower-class home.[2] Deutsch also says that:

> The acquisition of language facility and fluency and experience with the multiple attributes of words is particularly important in view of the estimate that only 60 to 80 per cent of any sustained communication is usually heard. Knowledge of context and of the syntactical regularities of a language make correct completion and comprehension of the speech possible. This completion occurs as a result of the correct anticipation of the sequence of language and thought. The child who has not achieved that anticipatory language skill is greatly handicapped in school.
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> In observation of lower-class homes, it appears that speech sequences seem to be temporally very limited and poorly structured syntactically. It is thus not surprising to find that a major focus of deficit in the children's language development in syntactical organization and subject continuity. In preliminary analysis of expressive and receptive language data on samples of middle- and lower-class children at the first- and fifth-grade levels, there are indications that the lower-class child has more expressive language ability than is generally recognized or than emerges in the classroom. The main differences between the social classes seem to lie in the level of syntactical organization. If, as indicated in this research, with

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[1] *Ibid.*, p. 36.

[2] Deutsch, *op. cit.*, p. 172.

> proper stimulation a surprisingly high level of expressive functioning is available to the same children who show syntactical deficits, then we might conclude that the language variables we are dealing with here are byproducts of social experience rather than indices of basic ability or intellectual level.[1]

In another type of social-class-related language analysis, Bernstein, an English sociologist, has pointed out that the lower-class tends to use informal language and mainly to convey concrete needs and immediate consequences, while the middle-class usage tends to the more formal and to emphasize the relating of concepts.[2] Further, Bernstein's reasoning would seem to point out a basic reason for the communication gap which often exists between the middle-class teacher and the lower-class child and the need for direct instruction.

Deutsch states that according to Piaget's theories, later problem-solving and logical abilities involving language are built on the earlier and orderly progression through a series of developmental stages involving the active interaction between the child and his environment.[3] Language development, says Deutsch,[3] does not occupy a super-ordinate position. That is, language is not the most important factor in this interaction. In contrast, Vygotsky[5] has made language the essential ingredient in concept formation, problem-solving, and in the relating to an interpretation of the environment.

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[1] *Ibid*., p. 174.

[2] B. Bernstein, "Language and Social Class," British Journal of Psychology, 51 (February, 1960), 270.

[3] Deutsch, *op. cit*., p. 175.

[4] *Ibid*.

[5] L. S. Vygotsky, Thought and Language, Massachusetts Institute of Technology Press, Cambridge, 1962.

Data collected by Deutsch[1] tend to indicate that class differences in perceptual abilities and in general environmental orientation decrease with chronological age, whereas language differences tend to increase.

Black,[2] summarizing Metfessel's work, has identified the following "factors" as significant in the language development of disadvantaged children:

1. Culturally disadvantaged children understand more language than they use. This comparison does not imply a wide hearing or understanding vocabulary . . .
2. Culturally disadvantaged children frequently use a great many words with fair precision, but not those words representative of the school culture.
3. Culturally disadvantaged children frequently are crippled in language development because they do not perceive the concept that objects have names, and that the same objects may have different names. The impoverished economic conditions under which these pupils are reared, with a scarcity of objects of all types, and the absence of discussion which characterizes communication in the substandard home prejudice against the development of labels and of the concept of a specific name (or names) for everything.
4. Culturally disadvantaged first-grade children use fewer words with less variety to express themselves than do first-grade children of higher socioeconomic classes.
5. Culturally disadvantaged children use significantly smaller proportion of mature sentence structures, such as compound, complex, and more elaborate constructions.
6. Culturally disadvantaged children learn less from what they hear than do middle-class children. This appears to be particularly true for disadvantaged children, who come from a milieu in which the radio, television, and the sounds made by many people living in crowded quarters provide a background of noises from which the individual must retreat.

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[1] Deutsch, *op. cit.*, p. 176.

[2] Millard H. Black, "Characteristics of the Culturally Disadvantaged Child," The Disadvantaged Child, Joe L. Frost and Glenn P. Hawkes (Eds.), Houghton Mifflin Company, Boston, 1966, pp. 46-47.

In the study of language done by Loban,[1] 338 subjects were selected to represent a complete range of social and economic backgrounds found in California. Loban analyzed the language used by these children through their kindergarten, elementary, and junior high school years. It is the first longitudinal study of language using a population of this size. The findings concerning fluency in this study were drawn from four sources: (1) the amount of language uttered by the subjects; (2) the subjects' freedom from mazes, i.e., a tangle of language making no semantic sense and impossible to classify phonologically or semantically; (3) the extent of their vocabularies; and (4) their manner of speaking. The subjects' oral language was analyzed for evidence on ability to use and vary the basic structural patterns of English. In his findings Loban states that all the subjects use the relatively few basic structural patterns of the English language. Thus, structural patterns reveal fewer remarkable differences than does dexterity of substitution within the patterns.[2] The important differences show up in the substitution of word groups for single words, in the choice and arrangement of movable syntactic elements, in variety of nominals, and in strategies with predication. Here the subjects' differences are much greater. The amplification and elaboration of structural patterns prove to be the important clue to language proficiency. A transformational analysis, although carried out for only two subjects, illustrates the possibilities of a more precise method of measuring grammatical complexity. This research once again points out that subjects from the least favored socioeconomic categories find themselves at a disadvantage in schools where the verbal linguistic skills of the middle class prevail.[1]

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[1] Walter Loban, Language Ability, Final Report to the Cooperative Research Monograph, No. 18, U.S. Department of Health, Education, and Welfare, 1966, pp. 19-57.

[2] *Ibid.*, p. 38.

Braine[3] and Fraser and Brown,[4] in their studies of the grammar of younger but more privileged children, have noted that, among these children, the smaller connectives and other structure words are lacking. To this extent, the culturally deprived child resembles a culturally privileged child of a younger age; but, Bereiter and Englemann say that there is a very important difference. The culturally privileged two-year-old uses a "reduced grammar." He leaves out words that he does not know and forms condensed sentences out of the words he does know how to handle. Thus, even though his sentences may consist of only two or three words, they are distinct words, and he is able to recombine them flexibly because they exist for him as independent entities. Disadvantaged children, on the other hand, often blend the words together with noises that take the place of words and inflections they do not know, so that all the words tend to become fused into a whole.[5] It would be interesting to find out whether or not this point of view holds for the disadvantaged Spanish-speaking child.

On the positive side of the language characteristics of the culturally deprived, Riessman urges the educator to discover that disadvantaged children are often surprisingly articulate in role-playing situations. However, the quality of language employed therein has its limitations and herein lies the deficit. Riessman continues by saying that if the schools have an awareness of the positive verbal ability—whatever its quality—teachers might look for additional techniques to bring out the verbal facility.[1] The school can foster the cognitive development of the child best when it is realized that the child brings to his school years a variety of concepts, as represented by a large vocabulary, but that many gaps which still exist in his verbal response system must be filled in as natural a way as possible.[2]

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[1] *Ibid.*, pp. 50-51.

[2] M. D. Braine, "The Ontogeny of English Phrase Structure," Language, 39 (April, 1963), 1-13.

[3] R. Brown and C. Fraser, "The Acquisition of Syntax," Society for Research in Child Development Monographs, No. 29, 1964, pp. 43-79.

[4] C. Bereiter and S. Englemann, Teaching Disadvantaged Children in the Preschool, Prentice-Hall, Inc., Engelwood Cliffs, New Jersey, 1966, pp. 35-36.

Lado contends that progress in language learning comes not merely in the addition of new words but in the use of groups of words and sentence-like utterances. Major progress comes in the form of pattern learning, that is, learning sentence and word patterns which permit him to build new sentences by analogy. This takes place before he can analyze and differentiate the elements of the sentence he uses. Pattern and analogy come to his aid early and are powerful elements in language learning.[3]

Dunkel proposes that the language channels for thought and speech are developed through model sentences on basic patterns which the student has overlearned and overpracticed until they are even more automatic than their equivalents in his native tongue. In part, these sentences are useful in themselves; but their more important function is to serve as basic linguistic equations in which numerous substitutions can be made. By making suitable alterations within these patterns the student has a means of thinking and saying a great many things. If the foreign language is to serve as a mold for thought, these linguistic channels must be ready. Those in the native language always are available because of use from infancy. Until the foreign language can be brought to an equal readiness as a medium of thought, thinking will continue to be in the native language.[1]

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[1] Riessman, *op. cit.*, p. 54.

[2] McCarthy, *op. cit.*, p. 750

[3] Robert Lado, Language Testing, McGraw-Hill Book Company, Inc., New York, 1964, p. 12.

Dunkel goes on to say that the teacher's concern for the student should be: (1) imparting a mastery of the basic patterns and their use; and (2) providing sufficient practice in manipulating these patterns into the various combinations used by the fluent native-speaker of the language. The literature on second-language indicates that while many experimental programs may have been theoretically sound, they tended to be generated by overenthusiasm and overoptimism. This is to say that they frequently underestimated the number of such linguistic formulae needed and the amount of practice necessary to establish permanent, fixed language fluency to the level of functioning as a medium of thought.[2]

Supplementing the above statements, McCarthy states that the mere fact that the child learns the language of his environment is evidence of the importance of imitation. Children imitate all aspects of the behavior of others. This is especially apparent in motor and verbal areas. The fact that the congenitally deaf does not learn to speak because he is deprived of the opportunity to imitate others also bears witness to the important role of this factor.[3]

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[1] H. B. Dunkel, Second Language Learning, Ginn and Company, Boston, 1948, p. 54.

[2] *Ibid.*, p. 150.

[3] McCarthy, *op. cit.*, p. 517.

The schools must recognize the complexity of the educational problem of disadvantaged children and must not expect to solve these problems by some single change such as a new textbook, a more favorable teacher-pupil ratio, a teaching machine, and so forth. The basic problem is to start with the child where he is and to proceed by a carefully developed and sequential program to bring him up to a level where he can learn as well as other children and eventually under the same conditions as other children.[1]

Summary

The literature reviewed suggests a number of conclusions concerning the language characteristics of disadvantaged Spanish-speaking children. These conclusions can be arranged into the following categories.

Considering the language characteristics of Spanish-speaking children, it is the general consensus of educators of Spanish-speaking children to consider their language, both their mother tongue and English, to be substandard and hence inappropriate to insure academic success in the English-speaking school. The question that should be researched concerning the poor grade of language used by these children should be, *How poor is "poor"?* In order to arrive at an answer, ways of obtaining language and making an objective assessment of it should also be considered.

In the area of cultural deprivation and language development in young children, the literature emphasizes the importance of the cultural and socioeconomic factors in the learning of a language. The general conclusion is that these factors are interrelated and affect the language capabilities that a disadvantaged child brings with him to school and his performance of the tasks set up by the middle-class-English-speaking school. Since a child does possess a language, adequate or inadequate, instruction should be geared to capitalize on the positive verbal ability so that the school can foster the cognitive development of the child. The question is how can instruction be geared without first assessing the language.

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[1] Bloom, Davis, and Hess, *op. cit.*, p. 23.

The research of language development and learning of elementary school children has been suggestive rather than conclusive concerning the culturally disadvantaged Spanish-speaking child. Most of the research has been done for other types of children and the need still exists for assessing the language (vernacular and foreign) of disadvantaged Spanish-speaking children at the preliterate stage and the best ways to achieve this. Judging from the general information available, a promising procedure would be to obtain these data through securing a set of responses on an individual basis using objects and situations which would be familiar to the Spanish-speaking children. Responses secured in this manner could then be analyzed for the basic sentence patterns in English and Spanish and constitute one basis, at least, to assess the extent of their capabilities in either language.

The preceding studies on child language development have used different approaches to measure a child's linguistic ability, i.e., kinds of sentence structures, sentence length, and vocabulary analyses. These studies suggest that amplification and elaboration of structural patterns would prove to be an important clue to language proficiency. Hence, in this study the use of more complex techniques of syntactic analysis (basic sentence patterns, transformations, and types of sentences) will be employed to determine the oral language development, in both languages, that disadvantaged Spanish-speaking children possess.

CHAPTER III

METHODS AND PROCEDURES

This study was designed to investigate the status of the basic syntactical structures of the oral language development that disadvantaged first-grade Spanish-speaking children possess in Spanish and English. An ancillary task of the investigation was to field test the first section of the Language-Cognition Test (Spontaneous Language).[1] This section of the test purports to measure the status of oral language development through a linguistic analysis of the basic sentence patterns and transformations present in the oral responses of primary grade children. In order to test for similarities and differences among the four groups (OAS, OAE, NOA, NOA-NS) involved, methods and procedures were required to accomplish two tasks in the following sequence for the comparative analysis planned: (1) securing a comprehensive sample of the language, both in English and Spanish, for each of the subjects in the four groups; and (2) identifying and classifying the basic types of sentence patterns and fundamental transformations within Spanish and English secured in the children's responses. Chapter III is concerned with the specific methods and procedures used to accomplish these tasks.

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[1] Anne O. Stemmler, "The LCT, Language-Cognition Test," Research Edition. Unpublished, The University of Texas at Austin, 1967.

Description of the Subjects

The subjects for this study were chosen in the fall of 1966 from five of the nine elementary schools in the San Antonio Independent School District, San Antonio, Texas, participating in The University of Texas Language Research Project.[1] Horn's project area encompasses approximately ten square miles on the western side of San Antonio.[2] Pupils enrolled in this cluster of schools are almost 100 percent Spanish-speaking. The Mexican-American in Horn's project area is in the majority (84.1 percent) and lives in poverty. That is, 52.8 percent are existing on annual incomes of less than $3,000, 32.7 percent are trying to exist on annual incomes of less than $2,000, and 13.3 percent, on incomes of less than $1,000 annually.[3]

MacMillan reports that in San Antonio, as elsewhere in the Southwest, the median years of school completed by persons having a Spanish surname and who are 25 years old and over is 5.8. In the area of Horn's project the median years of school is 4.9.[4] It is therefore clear that the major characteristics of the subjects of this study are: (1) economic deprivation, (2) deficiency in both languages, and (3) educationally disadvantaged.

The subjects were selected on the basis of the criteria noted below:

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[1] Thomas D. Horn, A Study of the Effects of Intensive Oral-Aural Spanish Language Instruction, Oral-Aural English Language Instruction, and Non-Oral-Aural Instruction on Reading Readiness in Grade One. The University of Texas at Austin, 1966.

[2] Robert W. MacMillan, "A Study of the Effects of Socio-economic Factors on the School Achievement of Spanish-speaking School Beginners," Ph.D. dissertation, College of Education, The University of Texas at Austin, 1966, p. 107.

[3] *Ibid.*, pp. 112-116.

[4] *Ibid.*, pp. 130-133.

1. Each subject was a native speaker of Spanish, i.e., his mother tongue or first language was Spanish.
2. Each subject was enrolled in one of the schools within the poverty area described above and considered to be disadvantaged.
3. Each subject was enrolled in the first grade for the first time.
4. Each subject selected belonged exclusively to one of the four treatment groups (OAS, OAE, NOA, NOA-NS).
5. Each of the four groups contained an equal number of boys and girls.

The characteristics of the language teaching for the four treatment groups are described as follows. The OAS (Oral-Aural Spanish) group received intensive oral language instruction in Spanish using science materials with audio-lingual techniques. The OAE (Oral-Aural English) group received intensive oral language instruction in English using science materials with audio-lingual techniques. The NOA (Non-Oral-Aural) group received no special experimental program in oral language development in English or Spanish, but used the same science materials as the other groups above. The NOA-NS (Non-Oral-Aural-No-Science) group used neither the intensive oral language development based on special science materials nor audio-lingual techniques, but followed the regular curriculum as prescribed by the San Antonio Independent School District. Eighteen subjects from twenty-three classrooms and five schools, equally divided by sex and grade level, constituted each of the four groups. A total of eighty-eight subjects constituted the original sample; pupil attrition resulted in a total of sixty-four complete language analyses.

Procedures for Collecting the Data

Sampling Procedure

For the purpose of this study, four independent random samples equally divided by sex per sample were drawn from four treatment groups (OAE, OAS, NOA, NOA-NS) using twenty-three first-grade classrooms in five elementary schools.[1] Each of the four samples contained eighteen subjects, nine boys and nine girls. Sixteen alternates, four from each of the four treatment groups equally divided by sex, were randomly selected to assure a sufficient number of cases on which to perform statistical analyses, since the attrition rate in the target population is predictably high.

In this study, the sample unit was the pupil. The effect of the teacher variable was controlled in two ways: (1) randomizing the selection of subjects for the four independent random samples in the four groups; and (2) using twenty-three first-grade classrooms which would presumably represent levels of teaching ranging from high to low effectiveness.

Description of Data-Gathering Instruments

Several types of instruments were administered to students who became subjects for this study in both its pre-testing and post-testing aspects.

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[1] Wilfrid Dixon and Frank Massey, Introduction to Statistical Analysis, McGraw-Hill Book Company, Inc., New York, 1957, pp. 366-371. The table of random numbers described by these authors was used for the selection of subjects.

Pre-Testing Instruments

Language-Cognition Test: In the present study evidence concerning the subjects' use and development of language was needed for each individual. In order to collect these data, the Language-Cognition Test (LCT),[1] Part I, was used as one criterion measure. The first section of the LCT termed "Part I: Spontaneous Language" (see Appendix A) was used as the measure of the subjects' language status, focusing on its syntactical structure only, both in English and Spanish. This section of the test was used to assess the language status of each subject through eliciting oral responses that would reveal the basic syntactical structures and transformations of the languages involved. The LCT was administered on an individual basis and was double-administered in English and Spanish with the same examiner conducting both administrations.

The examiner recorded the child's responses exactly as he gave them. Taped recordings of every child's responses were made so that the examiner was able to check on the accuracy of the written record made. The recorded responses for each subject were then analyzed for the number responses for each of the categories used in the linguistic analysis (e.g., basic sentence patterns, transformations, one-word utterances, loan words). The number of responses secured for each category was then tabulated and yielded the set of frequencies for a particular subject. These frequencies for the categories constituted the set of raw scores for each subject; the raw scores constituted the basis for subsequently computing the factor scores in the factor analysis that followed.

In Part I, the subject was presented with two kinds of tasks, using different stimuli. For the first task, the child was given what should be familiar concrete objects (e.g., a cap, a ball) typically found in his environment, and simply asked to name the object(s) and to tell everything he could or knew about it or them. He was allowed to handle the objects and encouraged to talk as much as he could. Five items were used for this task, excluding the practice item.

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[1] Stemmler, *op. cit.*

For the second task, the child was handed a picture in which some action was occurring, e.g., a child nonchalantly painting his dog to his father's astonishment. He was then asked to make up a story that went with the picture. Pictures were also selected to provide situations with which children would presumably be familiar and for which they could create a sequence of events. If the child did not appear to understand this direction, he was then asked to tell everything that was going on in the picture. If he could not handle this task, he simply was asked to tell what he saw in the picture so that a response was obtained. There were six items used for this task.[1]

Intelligence Measure: The Goodenough-Harris Draw-A-Man Test was used to secure an estimate of intelligence for each of the subjects. This intelligence measure was used for three reasons: (1) the reported correlation between an individual intelligence test result and the Goodenough-Harris Drawing Test score is quite substantial for children between the ages of five and ten;[2] (2) the test is an entirely non-verbal performance-type test; and (3) this test was previously used by Horn as an estimate of intelligence with essentially the same type of subjects.

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[1] Stemmler, *op. cit.*

[2] F. L. Goodenough and Dale B. Harris, Goodenough-Harris Draw-A-Man Test, Harcourt Brace and World, Inc., New York, 1963, p. 246.

The child was asked first to "draw-a-cat"[1] in an effort to familiarize him with the main task that was to follow. The main task of the test was for the child to draw a picture of a whole man. The assumption is that this drawing reflects the child's "concepts" which grow with his mental maturity and therefore can be used as a measure of his intellectual maturity.[2] The instructions for this test were given both in English and Spanish before the children began the drawing task. The test was administered to the subjects in small groups. There was no time limit for this test.

General Ability Measure: The Inter-American Test of General Ability, Level One, Form CEs (Spanish) and Form DE (English) were also administered as pre-tests.[3] These tests were used because, according to Manuel, they were designed to yield "comparable results when administered in Spanish and English and provide means now lacking or imperfectly developed for comparing the abilities and educational achievements of pupils of different languages and cultures."[4]

This test is composed of four parts: (1) Oral Vocabulary, 25 items; (2) Number, 15 items; (3) Association, 20 items; and (4) Classification, 20 items. In Part 1, Oral Vocabulary, the task of the pupil was indicated orally, and the child was asked either to mark the object called for or to mark the picture of the situation described. In Part 2, Number, the items included numerical concepts and "problems" of computation. The task in Association was to find the picture that belonged with the stimulus picture. In Classification the child was to find the picture that was different from the others. These two parts appear to be measures of the child's ability to categorize and see relationships. The time for this test, exclusive of directions, was sixteen minutes.

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[1] The "Draw-A-Cat" part of this test was developed during the testing phase carried out for the San Antonio Language Research Project during its first year of operation.

[2] Goodenough and Harris, *op. cit.*, p. 247.

[3] Herschel T. Manuel, Inter-American Series. Test of General Ability, Level 1, Primary, Form DE, Guidance Testing Associates, Austin, Texas, 1962.

[4] Herschel T. Manuel, Development of Inter-American Test Materials, U.S. Department of Health, Education, and Welfare, Office of Education Final Report, December, 1966.

Post-Testing Instruments

Language-Cognition Test: The criterion measure, Part I: Spontaneous Language, of the Language-Cognition Test was again administered in both its Spanish and English forms. The danger of "effect of practice" would in all probability be negligible for the following reasons: (1) length of time that elapsed between pre- and post-administrations (from September to April); (2) the age of the subjects (primary grade children); and (3) the spontaneous nature of the task (no correct answer involved.).

Reading Measure: The Inter-American Test of Reading,[1] Primary-Level 1, Form ECs (Spanish) and Form DE (English), was used to determine the extent to which the scores obtained in reading (receptive visual language) would correlate with the factor scores secured for the criterion measure, LCT (expressive oral language). This test has two parts and is intended for children of ages six and seven. The two parts are described as follows: (1) Vocabulary, 30 items—this section samples the ability of the child to recognize the sight vocabulary included in this part and (2) Comprehension, 30 items—

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[1] Manuel, *op. cit.*

this section gives a measure of the basic abilities of comprehension, e.g., recall of details and facts. In this test the child chose a picture suggested by a word, phrase, or paragraph. The total time of administration for this test was eighteen minutes, exclusive of directions.

Analyses of the Data

The analyses of the data for this study were done in three categories: (1) pre-test data analysis; (2) post-test data analysis; and (3) comparison of pre- and post-test data.

Analysis of Pre-Test Data

The specific procedures included in the analysis of pre-test data were carried out in the following sequence: (1) a linguistic analysis of the data collected; (2) a factor analysis using the raw scores (frequencies of responses) in each linguistic category; and (3) an analysis of covariance done separately on the LCT factor scores using I.Q. as a covariable. These procedures and their purposes are briefly described below.

Linguistic Analysis: The scoring procedures for the Spontaneous Language Section of the LCT were derived from the six basic types of sentence patterns and five fundamental transformations described by Stockwell, Bowen, and Martin.[1] These six types of basic sentences and transformations were selected because they are patterns of the more general type

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[1] R. P. Stockwell, J. D. Bowen, and J. W. Martin, The Grammatical Structures of English and Spanish, University of Chicago Press, Chicago, Illinois, 1965, p. 25.

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(i.e., they can signify whether or not a speaker has the basic command of the language).

A "Linguistic Analysis Form" was developed by this writer (see Appendix B) and its purposes were twofold: (1) to show and describe the types of linguistic analyses to be done; and (2) to provide the frequency distribution of the various components of this analysis for each subject. In this form, each of the six basic sentence patterns used for the two languages, English and Spanish, was presented with at least one example. The patterns of the Spanish sentence were grouped and numbered so as to match them as closely as possible with the English patterns. The analysis of the pre-test data indicated that these patterns and transformations would be the most appropriate classification system for the types of responses elicited by the tasks of Part I of the LCT and the age level of the children involved. While the basic types of sentence patterns and transformations constituted the main part of the analysis, additional categories (i.e., frequency of fragments, borrowed or loan words, adjectival usage, correct verb usage, and tenses used) were included to provide additional information concerning the expressive language of disadvantaged Spanish-speaking children.

Factor Analysis: A factor analysis, as described by Veldman,[1] was applied to the frequencies (raw data) of various types of responses obtained from the Spontaneous Language Section of the LCT. Concerning factor analysis, he states that

> The general goal of factor analysis is the reduction of a set of variables used to gather data from subjects to a smaller set of new, uncorrelated variables which are defined solely in terms of the original dimensions, and which retain the most important information contained in

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[1] D. J. Veldman, Fortran Programming for the Behavioral Sciences, Wiley, New York, 1967, pp. 1-76.

> the original data. Factors, then, are variables or dimensions of the same general nature as those variables from which they were derived.[1]

In this case, the specific purpose was to reduce the number of dependent variables identified in the linguistic analysis of the raw data collected for this study.

As used here, the first step in the factor analysis was to obtain an intercorrelation matrix for the number of variables; this matrix was the starting point for the factor analysis. Since the computation of the correlation coefficient implicitly equates the variables for centrality and variability, all information present in the raw-data matrix which was tied to the scaling of the twenty-two variables used in the LCT was no longer available for analysis. The matrix now only represented the pattern of relationships among the twenty-two original variables.

The second step in the factor analytic procedure was the extraction of roots and vectors of the matrix. This extraction achieved a reduction of the original variables to one factor score which contained only the number of independent dimensions necessary to represent the information contained in the original matrix. These roots and vectors are also known as factor-loadings. These loadings indicate the degrees of relationships between the original scores and each of the new factor variables.

The procedure used for extracting the roots and vectors of a matrix is called "*principal axis analysis*" or "*principal components analysis*."[2] This type of analysis yielded the factor-loading matrix.

The Varimax method was the type of rotation used on the principal axes obtained. Varimax factor scores can be defined simply as principal-axis factor scores post-multiplied by the same transformation matrix used to rotate the principal-axis factor loadings. The methods described here served to describe a particular set of data, reorganizing and reducing it to essentials by means of criteria internal to the analytic system.[1]

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[1] *Ibid.*, p. 25.

[2] *Ibid.*, p. 35.

Analysis of Covariance: An analysis of covariance (regression) was applied to the LCT factor scores secured from the pre-testing period using I.Q. as a covariable. The purpose of and procedure for the analysis of covariance, as described by Myers,[2] is presented below.

According to Myers, much of the error in experimentation may be traced to those characteristics of individual subjects that correlate highly with the dependent variable. For example, variability in intelligence among subjects increases variability in performance within groups.[3] Therefore, the technique used to provide an approach to the eliminating the problem of experimental error of this type was an analysis of covariance.

This type of analysis was used to determine whether the regression on I.Q. on each dependent variable was the same for all the four groups involved. Through an analysis of this type, states Myers, the homogeneity of regression is then tested by a ratio of mean squares based on: (1) the variability of the group regression coefficients about an average coefficient; and (2) the variability of scores about each group regression line. If the F statistic secured from this procedure is not significant, the two terms (the total sum of squares and the adjusted total of sum squares being partitioned) may be pooled to form a single estimate of error which will be subsequently used in testing treatment effects.[1]

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[1] *Ibid.*, pp. 38-39.

[2] Jerome L. Myers, Fundamentals of Experimental Design, Allyn and Bacon, Boston, 1966.

[3] *Ibid.*, p. 301.

Analysis of Post-Test Data

The second part, the analysis of the post-test data, consisted of an analysis of the data secured in the post-testing phase using the same procedures for the linguistic analysis and factor analysis described for the first part. The analysis of covariance was not repeated for this part since no post-test intelligence testing was done.

Comparative Analysis of Pre- and Post-Test Data

The third part consisted of the comparison of the LCT factor scores (dependent variables) derived from the LCT raw scores in both pre- and post-testing phases with the variable of time, group, and sex (independent variables) for each administration using a repeated measurement analysis of variance. This analysis, as described by Myers, is also known as the two between- and one within-subjects variable.[2]

The repeated measurement design was used because, as Myers has stated, it is concerned with performance trends over time, i.e., each subject is tested at all points in time that are of interest.[3] Time then becomes a variable. This design was repeated on the four groups involved in this study to find out the interactions and differences (if any) between groups that have undergone different treatments of teaching (OAS, OAE, NOA, NOA-NS).

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[1] *Ibid.*, p. 306.

[2] *Ibid.*, p. 152.

[3] *Ibid.*, pp. 174-176.

Summary

This chapter has presented the methods and procedures used to secure the evidence of the basic sentence patterns and transformations of the four groups involved. Included were descriptions of the subjects participating in the study; the sampling technique used; the methods and procedures for securing the data; and the linguistic and statistical procedures used to analyze the data both in pre-testing and post-testing phases. The findings resulting from the types of analyses performed (i.e., factor analysis, regression analysis, and repeated measurement analysis of variance) are reported in Chapter IV.

CHAPTER IV

FINDINGS AND DISCUSSION

The major purpose of this chapter is to report and discuss the specific findings from the study. A subsidiary purpose is to present and describe the two sets of LCT factor scores derived from the factor analysis performed on the pre- and post-test data. This step is necessary since the findings for this study consist of a series of comparisons between the LCT factor scores obtained during the pre-testing phase and the variables of I.Q., sex, and group membership. Hence, the chapter is organized in the following manner. The first section is devoted to the explanation and description of the factor scores obtained. The factor scores for both the first and second factor analysis are described and appear in tables. The second section is concerned with the presentation and discussion of the major findings that resulted from the analysis of covariance (multiple linear regression) between LCT factor scores and I.Q. measure. And the third section presents the findings secured from the comparisons carried out between LCT factor scores and the variables of sex, treatment, and time. Within each section, the specific hypothesis under consideration is cited first; next, the findings are described and appear in tables; and lastly, the correlations performed between LCT factors and the Inter-American Test of Readings are reported and discussed.

LCT Factor Scores

In order to reduce the two sets of twenty-two linguistic variables in Spanish and English to a manageable number for performing the subsequent multiple regression analyses, the frequencies secured for each of these variables for the two languages were treated using factor analysis.[1] The two sets of variables in Spanish and English were then reduced to six factor scores for each language.[2] These factor scores constituted the measures of the dependent variable for the regression analyses that followed.

Factor loadings representing the relationships among the twenty-two original variables and each of the new factors were obtained which were subsequently used to define these factors. Since the original variables were narrow in scope (i.e., a limited linguistic analysis) for the statistical treatment which was required, a cut-off point for the factor loadings was limited to those variables which had loadings of .60 and/or greater for a particular factor.[3]

First, the six factors obtained for pre-test Spanish are described and are shown in Table 1. Next, the six factors obtained for English are described and appear in Table 2. The post-test factor scores (six for Spanish and six for English) are described and shown in Tables 3 and 4.

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[1] D. J. Veldman, _Fortran Programming for the Behavioral Sciences_, Wiley, New York, 1967, pp. 25-27.

[2] The decision as to how many factors to preserve was made by accepting Kaiser's criterion, namely, that only factors with eigenvalues greater than 1.0 should be accepted. The eigenvalues may be defined as the square root of the sum of squares for the factor loadings. Using this criterion, six factors emerged in each of the languages, Spanish and English. D. J. Veldman, _Fortran Programming for the Behavioral Sciences_, p. 35.

[3] The rotated factor loading of the original variables for each of the factors are shown in tables and appear in Appendices G and H.

Pre-Test Spanish Factors

Factor 1, General Sentences and Transformations Factor.—Six of the original variables (V) contributed the major loadings for this factor. Although only one basic sentence pattern was involved, the one used would seem to preclude knowledge of the ones considered more basic. Specifically, these variables were: V5, basic sentence pattern with transitive and intransitive construction with complement; V7, negative transformations; V8, interrogative transformations, V9, imperative transformations; V21, usage of complex sentences; and V22, usage of direct quotations. This factor was considered the strongest in Spanish since it included more variables than any of the other factors. The loadings for this factor were all positive.

Factor 2, Functionally Complete Sentences Factor.—This factor was characterized by negative loadings on only two variables. Soecifically, these variables were: V19, correct adjectival usage, and V20, compound sentences. Negative loading means that the factor loading under consideration measures the reverse of the hypothetical construct underlying the factor. In this case, the two negative loadings were interpreted to mean that the factor was only measuring functionally complete sentences.

Factor 3, Basic Sentences with English Loan Words Factor.—This factor contained loadings on two variables: V6, basic sentence pattern of the indefinite type, and V16, usage of English loan words. The loadings for this factor were positive.

Factor 4, Single Words Factor.—This factor was described as a bi-polar factor since it contained two variables,

TABLE 1

LCT FACTORS IN SPANISH
(Pre-Test Data)

Factor	Name of Factor	Variables	Rotated Factor Loadings
1	General Sentences and Transformations	5 Basic sentence pattern with transitive/intransitive construction with complement 7 Negative transformations 8 Interrogative transformations 9 Imperative transformations 21 Complex sentences 22 Direct quotations	.75 .60 .84 .84 .84 .88
2	Functionally Complete Sentences	19 Adjectival usage 20 Compound sentences	-.83 -.62
3	Basic Sentences with English Loan Words	6 Indefinite pattern 16 English loan words	.69 .75
4	Single Words	1 Basic sentence with predicate nominative/adjective 12 One word utterance	-.70 .70
5	Verb Usage	18 Incorrect verb usage	-.84
6	Combined Complete and Incomplete Basic Sentences	4 Transitive construction with direct object and indirect object 14 Functionally incomplete sentences	.63 .69

one loading negatively and the other loading positively. The variables were V1, basic sentences of the predicate nominative and predicate adjective type, and V12, one word utterances. V1 loaded negatively and V12 loaded positively. Hence, the interpretation that only single words were present as determinants for this factor.

Factor 5, Correct Verb Usage Factor.—Only one variable, V18, incorrect verb usage, characterized this factor. Since the factor loading was negative the factor was interpreted to measure only correct usage of verbs.

Factor 6, Combined Complete and Incomplete Basic Sentences Factor.—Two variables with positive loadings characterized this factor. The variables were V4, basic sentence pattern with transitive construction and containing both direct and indirect objects, and V14, functionally incomplete sentences.

Pre-Test English Factors

Factor 1, General Sentences Factor.—Five variables from the linguistic analysis contributed to the major loadings for this factor. Specifically, these variables were: V3, basic sentence pattern with transitive construction which has a direct object; V5, basic sentence pattern with transitive and intransitive construction with complement; V14, functionally complete sentences; V19, correct adjectival usage; and V20, usage of compound sentences. This factor was considered the strongest in English since it included more variables than any of the other factors. The loadings for this factor were all positive.

TABLE 2

LCT FACTORS IN ENGLISH
(Pre-Test Data)

Factor	Name of Factor	Variables	Rotated Factor Loadings
1	General Sentences	3 Transitive construction with direct object 5 Basic sentence pattern with transitive construction with complement 14 Functionally incomplete sentences 19 Adjectival usage 20 Compound sentences	.77 .84 .73 .76 .65
2	Passive Transformations	10 Passive transformations	.94
3	Sentence Fragments	1 Basic sentence with predicate nominative/adjective 6 Indefinite sentence pattern	-.73 -.66
4	Functionally Complete Sentences	4 Basic sentence pattern with direct object and indirect objects 21 Complex sentences	-.71 -.87
5	Simple Transformations	8 Interrogative transformations 9 Imperative transformations	.77 .74
6	Lack of Negative Transformations	7 Negative transformations	-.77

Factor 2, Passive Transformation Factor.—Only one variable, V10, passive transformations, characterized this factor. The factor loading for this factor was positive.

Factor 3, Sentence Fragments Factor.—This factor was characterized by negative loadings on only two variables. These factors were V1, basic sentences of the predicative nominative and predicate adjective type, and V6, basic sentence patterns of the indefinite type. Hence, for this factor the reverse existed and indicated the presence of sentence fragments only.

Factor 4, Functionally Complete Sentences Factor.—This factor was also characterized by negative loadings on only two variables. The variables were: V4, basic sentence pattern with direct and indirect objects, and V21, usage of complex sentences. The reverse interpretation again applied, namely, that only functionally complete sentences were present.

Factor 5, Simple Transformations Factor.—Two variables, with positive loadings, characterized this factor. The variables were V8, usage of interrogative transformations, and V9, usage of imperative transformations.

Factor 6, Lack of Negative Transformations Factor.—Only one variable characterized this factor and again dictated a negative interpretation since its factor loading was negative. The variable involved was V7, negative transformations.

Post-Test Spanish Factors

Factor 1, General Sentences and Transformations Factor.—Three of the original variables contributed the major loadings for this factor. Specifically, these variables were:

V2, basic sentence with intransitive construction; V10, passive transformations; and V20, compound sentences. The loadings for this factor were all positive.

Factor 2, Transformations and Complex Sentences Factor.—This factor was characterized by positive loadings on three variables. These variables were: V8, interrogative transformations; V9, imperative transformations; and V22, direct and indirect quotations.

Factor 3, Single Words and Sentence Fragments Factor.—This factor also only contained positive loadings for three variables. These variables were: V12, one-word utterances; V13, functionally complete sentences; and V14, functionally incomplete sentences.

Factor 4, Basic Sentences and Subjunctive Transformations Factor.—Positive loadings on three variables characterized this factor. The variables were: V3, basic sentence with direct object; V11, subjunctive transformations; and V19, correct adjectival usage.

Factor 5, Correct Verb Usage Factor.—Only one variable characterized this factor. This dictated a negative interpretation since its factor loading was negative. The variable involved was V18, incorrect verb usage.

Factor 6, Simple Sentences Factor.—This factor was described as a bi-polar factor since it contained two variables, one loading negatively and the other loading positively. The variables were: V4, basic sentences with direct object and indirect object, and V5, basic sentences with transitive and intransitive construction with complement; V4 loaded negatibely and V5 loaded positively. Hence, the interpretation that only simple sentences were present.

TABLE 3

LCT FACTORS IN SPANISH
(Post-Test Data)

Factor	Name of Factor	Variables	Rotated Factor Loadings
1	General Sentences and Transformations	2 Basic sentence with intransitive construction 10 Passive transformations 20 Compound sentences	.83 .78 .70
2	Transformations and Complex Sentences	8 Interrogative transformation 9 Imperative transformation 22 Direct quotations	.67 .88 .82
3	Single Words and Sentence Fragments	12 One-word utterances 13 Functionally complete sentences 14 Functionally incomplete sentences	.77 .78 .70
4	Basic Sentences and and Subjunctive Transformations	3 Basic sentence with direct object 11 Subjunctive transformations 19 Adjectival usage	.68 .75 .80
5	Verb Usage	12 Incorrect verb usage	-.82
6	Simple Sentences	4 Basic sentence with direct object and indirect object 5 Basic sentence with transitive/intransitive verb construction with complement	-.67 .62

Post-Test English Factors

Factor 1, General Sentences Factor.—Five variables contributed to the major loadings for this factor. Specifically, these variables were: V1, basic sentences of the predicate nominative and predicate adjective type; V2, basic sentences with direct object; V19, adjectival usage, V20, compound sentences; and V21, complex sentences. This factor was considered the strongest in English since it included more variables than any of the other factors. The loadings for this factor were all positive.

The following factors were all characterized by positive loadings and each factor contained two variables except for the last one, Factor 6, which contained only one variable. The factor names and the variables contained in them are described as follows: Factor 2, Complex Sentences Factor, V8, interrogative transformations, and V22, direct quotations; Factor 3, Complex Sentences and Simple Transformations Factor, V5, basic sentences with transitive and intransitive construction with complement, and V9, imperative transformations; Factor 4, Basic Sentences and Complex Transformations Factor, V4, basic sentences with direct and indirect object, and V11, subjunctive transformations; Factor 5, Single Words and Sentence Fragments Factor, V12, one-word utterances, and V13, functionally complete sentence; and Factor 6, Passive Transformation Factor, V10, passive transformations.

Results from Tests of Hypothesis 1
(Analysis of Covariance)

This section is concerned with the presentation and discussion of the major findings that resulted from the tests of Hypothesis 1 (that there are no significant initial differences between groups, including sex, in fall scores) using an

TABLE 4

LCT FACTORS IN ENGLISH
(Post-Test Data)

Factor	Name of Factor	Variables	Rotated Factor Loadings
1	General Sentences	1 Basic sentence with predicate nominative/predicate adjective	.73
		3 Basic sentence with direct object	.75
		19 Adjectival usage	.81
		20 Compound sentences	.83
		21 Complex sentences	.71
2	Complex Sentences	8 Interrogative transformations	.74
		22 Direct quotations	.82
3	Complex Sentences and Simple Transformations	5 Basic sentences with transitive/and intransitive construction with complement	.82
		9 Imperative transformations	.64
4	Basic Sentences and Complex Transformations	4 Basic sentence with direct object and indirect object	.74
		11 Subjunctive transformations	.79
5	Single Words and Sentence Fragments	12 One-word utterance	.86
		13 Functionally complete sentence	.84
6	Passive Transformations	10 Passive transformations	.92

analysis of covariance. This analysis considered the LCT factor scores as the dependent variable and the I.Q. measure as the concomitant variable. Regression analysis was chosen as the most appropriate way to compare the effects of different treatments (the four different teaching groups divided equally by sex) on the criterion vector (LCT factor scores). Hence, reported in this section are the findings for separate regression analyses which were performed on each of the six factors obtained for Spanish and English during the pre-testing phase. Additionally, the I.Q. scores obtained from the Goodenough-Harris at pre-test time were compared to determine whether or not there were any significant differences between the four treatment groups.

The full, or unrestricted, model. In order to perform the separate regression analysis on each LCT factor, a full model was established to treat each factor in each of the two sets of factors (Spanish and English) separately on group membership and sex variables with I.Q. as a covariable. The first full model was designed to examine the feasibility of performing a covariance analysis with the data concerned. When feasible, the restricted models available will continue to treat the I.Q. scores as covariables, thereby retaining the interaction of I.Q. and the other variables (sex and group membership).

Before studying the effects of the other variables on the LCT factor scores—I.Q. scores relationship, findings from the first model were assessed. The first model (Model 1) took the following form:

$$Y = A_1V_1 + A_2V_2 + \ldots A_8V_8 + A_9W_9 + \ldots A_{16}W_8 + E$$

where

V_i = 1 if corresponding element in Y comes from a member of the i^{th} group, 0 otherwise and

W_i = I.Q. score if corresponding element in Y comes from a member of the i^{th} group, 0 otherwise.

	Male	Female
i =	1 OAS	5 OAS
	2 OAE	6 OAE
	3 NOA	7 NOA
	4 NOA-NS	8 NOA-NS

$A_1 \ldots A_{16}$ = unknown coefficients or weights to be estimated by least-squares method

E = residual vector in which elements are discrepancies estimated and observed values in vector Y

In order to do an analysis of covariance, the following null-hypothesis must be accepted:

1. The slopes (due to amount of change in criterion per unit of I.Q.) for each of the eight groups are the same throughout the range of the concomitant variable. (I.Q.)

The restricted model to test this null-hypothesis is:

$$A_9 = A_{10} = A_{11} = A_{12} = A_{13} = A_{14} = A_{15} = A_{16} = A_0$$

If this hypothesis is rejected, then none of the subsequent tests are justified. If this hypothesis is accepted, then all of the remining tests are feasible, and this restricted model becomes the full model for the following hypothesis:

2. The difference between males and females in every group is the same, considering I.Q. as a covariable.

This model is called an interaction model and is stated as follows:

$$A_1 - A_5 = A_2 - A_6 = A_3 - A_7 = A_4 - A_8 .$$

The above model then became the full model for the following hypotheses:

3. Within each sex, there is no difference between the LCT factor scores of the four groups considering I.Q. as a covariable.

$$\text{Model:}\quad A_1 = A_2 = A_3 = A_4$$
$$A_5 = A_6 = A_7 = A_8$$

and

4. Within each treatment there is no difference between males and females, considering I.Q. as a covariable.

$$\text{Model:}\quad A_1 = A_5$$
$$A_2 = A_6$$
$$A_3 = A_7$$
$$A_4 = A_8$$

Before reporting the findings for the test of Hypothesis 1, it is necessary to report that the comparison of I.Q. scores obtained at pre-test time indicated that there were no significant initial differences between the four treatment groups. Table 5 indicates the group I.Q. means.

TABLE 5

GROUP I.Q. MEANS ON GOODENOUGH-HARRIS
(Pre-Test Time)

Group	Number	Group Mean	
		Raw Score	Standard Score
OAS	16	20.41	103
OAE	16	18.27	98
NOA	16	18.43	98
NOA-NS	16	20.00	102

Test of Hypotheses, Spanish Factor 1. The test for the null-hypothesis (that the slopes due to amount of change in criterion per unit of I.Q. for each of the eight groups are the same throughout the range of the concomitant variable) revealed that there was a significant difference between the slopes for the eight groups. (See Table 6.) The F-ratio was 3.28; p = .005. Therefore, the subequent tests for this factor that were to follow were not justified. The slopes and their significance are shown in Figure 1. From this graph, the following information can be obtained:

Although there was a significant difference among the eight groups, the regression lines for six of these groups (OAE females, OAS females, OAS males, NOA-NS males, NOA females, and OAE males) indicated the differences in slopes to to be minimal due to the parallelness to each other. Two of the eight groups showed slopes different from the other six groups. These groups were NOA-NS females and NOA males. The OAE females indicated a negative relationship to the I.Q. covariable, while the other groups indicated either a positive relationship or no relationship.

Test of Hypotheses, Spanish Factor 2. The test for the null-hypothesis 1a for this factor revealed that the slopes for the eight groups were not significantly different, hence the hypothesis was accepted. The F-ratio was .46; p = .53. (See Table 6.) The remaining tests for Hypothesis 1b (that the difference between males and females in every group is the same considering I.Q. as a covariable), Hypothesis 1c (that within each sex there is no difference between the LCT factor scores of the four groups considering I.Q. as a covariable), and Hypothesis 1d (that within each treatment there is no difference between males and females considering I.Q. as a covariable) were justified and conducted. The test for Hypothesis 1b revealed no significant difference between

TABLE 6

RESULTS OF ANALYSIS OF COVARIANCE FOR SPANISH FACTORS (Pre-Test Data)

Spanish Factor	Hypothesis							
	1a Equal Slopes		1b Interaction		1c Group		1d Sex	
	F	p	F	p	F	p	F	p
1	3.28	.005*	--	--	--	--	--	--
2	.96	.53	.03	.55	6.09	.001*	1.27	.26
3	1.40	.22	.45	.72	1.00	.40	.001	.97
4	.58	.77	.103	.38	.25	.86	5.20	.02*
5	.51	.83	1.59	.20	2.71	.05*	.19	.67
6	.61	.75	.64	.60	3.07	.03*	.14	.71

Note:

Hypothesis 1a:	The slopes (due to amount of change in criterion per unit of I.Q.) for each of the eight groups are the same throughout the range of the concomitant variable (I.Q.) (Equal Slopes) (df 7/df 68)
Hypothesis 1b:	The difference between males and females in every group is the same considering I.Q. as a covariable (Interaction) (df 3/df 75)
Hypothesis 1c:	Within each sex, there is no difference between the LCT factor scores of the four groups considering I.Q. as a covariable (Group) (df 3/df 78)
Hypothesis 1d:	Within each treatment, there is no difference between males and females considering I.Q. as a covariable (Sex) (df 1/df 78)

*($p < .05$); F = F ratio; p = probability

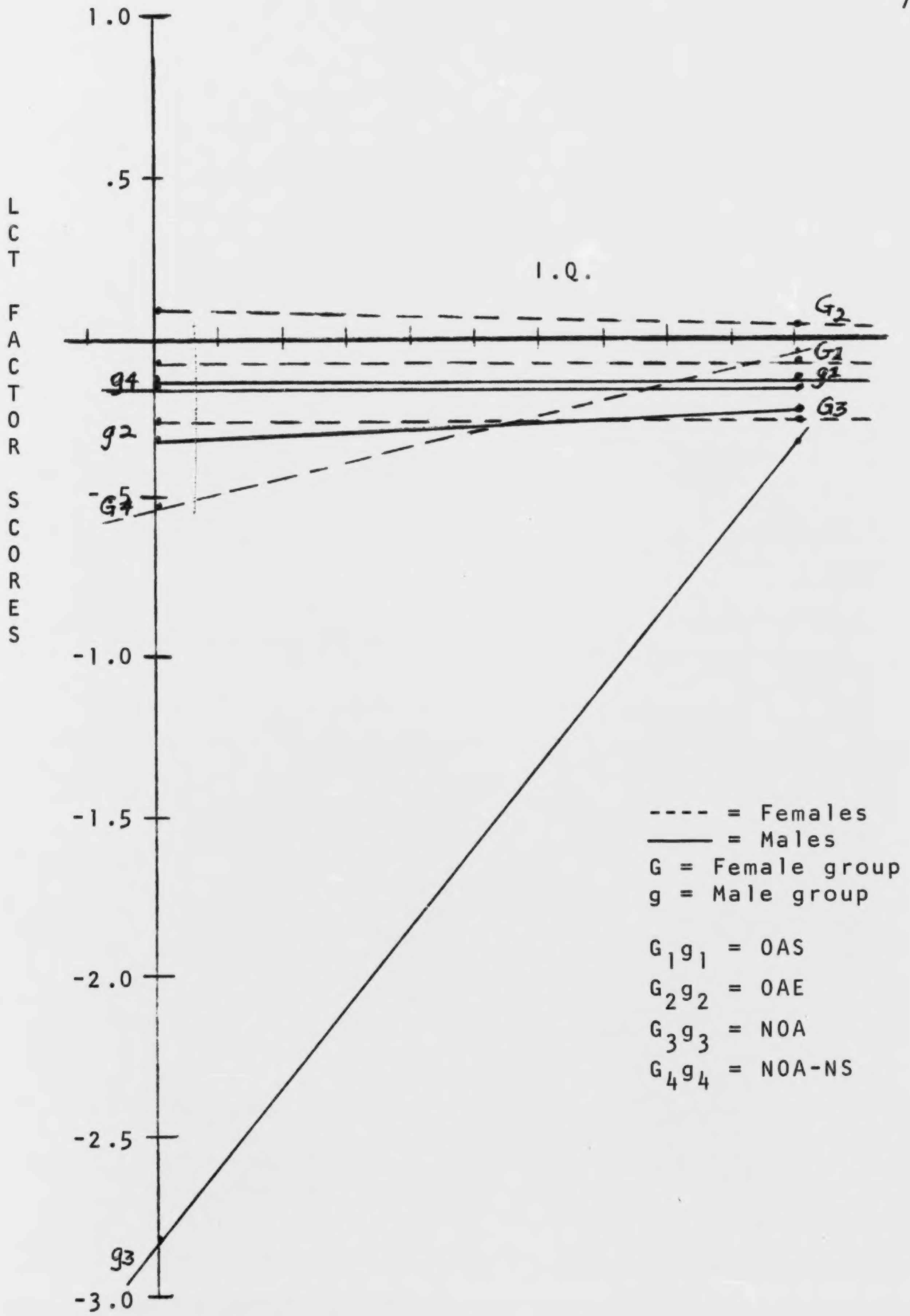

FIGURE 1.--Regression Analysis for Spanish Factor 1 (Pre-Test Data)

males and females (F-ratio was .90; p = .55). Hypothesis 1c was rejected (F-ratio was 6.09; p = .001), indicating that within each sex there was a difference between the LCT factor scores of the four groups considering I.Q. as a covariable. Hypothesis 1d was accepted, hence the statement that within each treatment there was no difference between males and females considering I.Q. as a covariable.

Test of Hypotheses, Spanish Factor 3. The test for the null-hypothesis 1a for this factor revealed that again the slopes for the eight groups were not significantly different, therefore this hypothesis was accepted. The F-ratio was 1.40; p = .22. The remaining tests for Hypotheses 1b, 1c, and 1d became feasible but when conducted each one accepted the null-hypothesis which indicated no significant differences in interaction, groups, and sex. Respectively the F-ratios and probabilities for these hypotheses were: F = .45; p = .72; F = 1.00; p = .40; and F = .001; p = .97.

Test of Hypotheses, Spanish Factor 4. Hypotheses 1a, 1b, and 1c for this factor were accepted (see Table 6 for F-ratios and probabilities) which indicated no significant differences for slopes, interaction, and group to be present. The test for Hypothesis 1d, on the other hand, rejected the null-hypothesis, hence the statement that within each treatment there were significant differences between males and females considering I.Q. as a covariable. The F-ratio was 5.20; p. = .02.

Test of Hypotheses, Spanish Factor 5. The first two hypotheses and the last one for this factor were also accepted. Hypothesis 1c (for this factor) was rejected showing that within each sex, there was a difference between the LCT factor scores of the four groups for this factor. The F-ratio was 2.71; p = .05.

Test of Hypotheses, Spanish Factor 6. The test for the hypotheses for this factor paralleled those of Factor 2 where Hypotheses 1a, 1b, and 1d were accepted and only Hypothesis 1c was rejected. Again this indicated that within each sex there was a difference between the LCT factor scores of the four groups. The F-ratio was 3.07; p = .03.

The significant differences which were indicated by testing the null-hypotheses 1c for Factors 2, 5, and 6 and Hypothesis 1d for Factor 4 can be explained by obtaining the adjusted means for each group yielded by each one of these factors. Table 7 contains the adjusted means which were significant for Hypothesis 1c for both Spanish and English factors. Table 8 shows the adjusted means for each group in the cases when Hypothesis 1d was significant.

The information obtained from Table 7 reveals that the adjusted group means for Spanish Factor 2 clearly indicates that the major significance shown for Hypothesis 1c is caused by three groups (NOA males, OAS females, and OAE females). The NOA males were different from the other three groups and OAS and OAE females are clearly set off from the other two groups by virtue of their groups means. Therefore, it is assumed that these three groups contributed to the major significance in LCT factor scores obtained for this factor. Adjusted means for the groups in Spanish Factor 5 reveal that, in this case, the OAE males have a mean score which is substantially different from the other three groups. OAS and NOA-NS females are clearly set off from the OAE and NOA females because of their higher scores. Hence, it appears that three groups again contributed to major significance encountered in this factor. For Spanish Factor 6, the adjusted means of the OAE males indicate that their scores were much higher than the other three male groups and OAE and NOA-NS females are clearly set off from the other two female groups. Table 8 contains the adjusted group means for Spanish Factor 4,

TABLE 7

ADJUSTED MEANS FOR GROUPS FOR HYPOTHESIS 1c
(Pre-Test)

Group	Spanish						English	
	Factor 2		Factor 5		Factor 6		Factor 6	
	M	F	M	F	M	F	M	F
1 OAS	- .701	-1.000	-.061	.711	-.277	-.352	.420	- .055
2 OAE	- .454	-2.695	-.414	.300	.271	-.707	.374	-1.808
3 NOA	-1.466	- .134	.038	.324	-.109	.029	.344	- .105
4 NOA-NS	.690	.830	.093	.532	-.209	-.593	.194	.131

TABLE 8

ADJUSTED MEANS FOR GROUPS FOR SPANISH FACTOR 4, HYPOTHESIS 1d
(Pre-Test)

Sex	OAS	OAE	NOA	NOA-NS
Males	.892	-.077	-.101	.469
Females	-.892	.805	-.005	-.762

the only factor for which Hypothesis 1c was significant. As it is clearly seen, the females (three out of four groups) are different from their male counterparts. The adjusted means for OAS and NOA-NS females are much lower and for OAE females the adjusted means are higher.

Test of Hypotheses, English Factor 1. The test for the null-hypothesis (that the slopes due to amount of change in criterion per unit of I.Q. for each of the eight groups are the same throughout the range of the concomitant variable) revealed that there was a significant difference between the slopes for the eight groups. (See Table 9.) The F-ratio was 3.18; p = .005. Therefore, the subequent tests for this factor that were to follow were not justified. The slopes and their significance are shown in Figure 2. From this graph, the following information can be obtained:

As in Spanish Factor 1, there was a significant difference among the eight groups for this factor. Again, the regression lines for each group indicated the differences in slopes to be minimal due to the parallelness to each other, except one group (OAE females) which showed a different slope than the others. The relationship for this line to the I.Q. covariable was positive.

Test of Hypotheses, English Factors 2 and 3. As indicated in Table 9, the test for the null-hypothesis 1 for these factors showed that the slopes for the eight groups were not significantly different, hence this hypothesis could not be rejected. Respectively the F-ratios and probabilities were: F = .22; p = .98 and F = 1.38; p = .23. The remaining tests for these hypotheses were justified but when performed, the null-hypothesis for each test was accepted.

TABLE 9

RESULTS OF ANALYSIS OF COVARIANCE FOR ENGLISH FACTORS
(Pre-Test Data)

English Factor	Hypothesis							
	1a Equal Slopes		1b Interaction		1c Group		1d Sex	
	F	p	F	p	F	p	F	p
1	3.18	.005*	--	--	--	--	--	--
2	.22	.98	.52	.68	1.21	.31	.60	.55
3	1.38	.23	1.31	.72	.38	.77	.08	.78
4	3.40	.003*	--	--	--	--	--	--
5	.85	.55	1.09	.36	2.40	.07	.75	.61
6	.61	.75	.64	.60	3.06	.03*	.14	.72

Note:

Hypothesis 1a: The slopes (due to amount of change in criterion per unit of I.Q.) for each of the eight groups are the same throughout the range of the concomitant variable (I.Q.). (Equal Slopes.) (df 7/df 70)

Hypothesis 1b: The difference between males and females in every group is the same. (Interaction test.) (df 3/df 77)

Hypothesis 1c: Within each sex, there is no difference between the LCT factor scores of the four groups considering I.Q. as a covariable (Group test). (df 3/df 80)

Hypothesis 1d: Within each treatment, there is no difference between males and females (Sex test). (df 1/df 80)

* $(p < .05)$; df = degrees of freedom; F = F–ratio; p = probability.

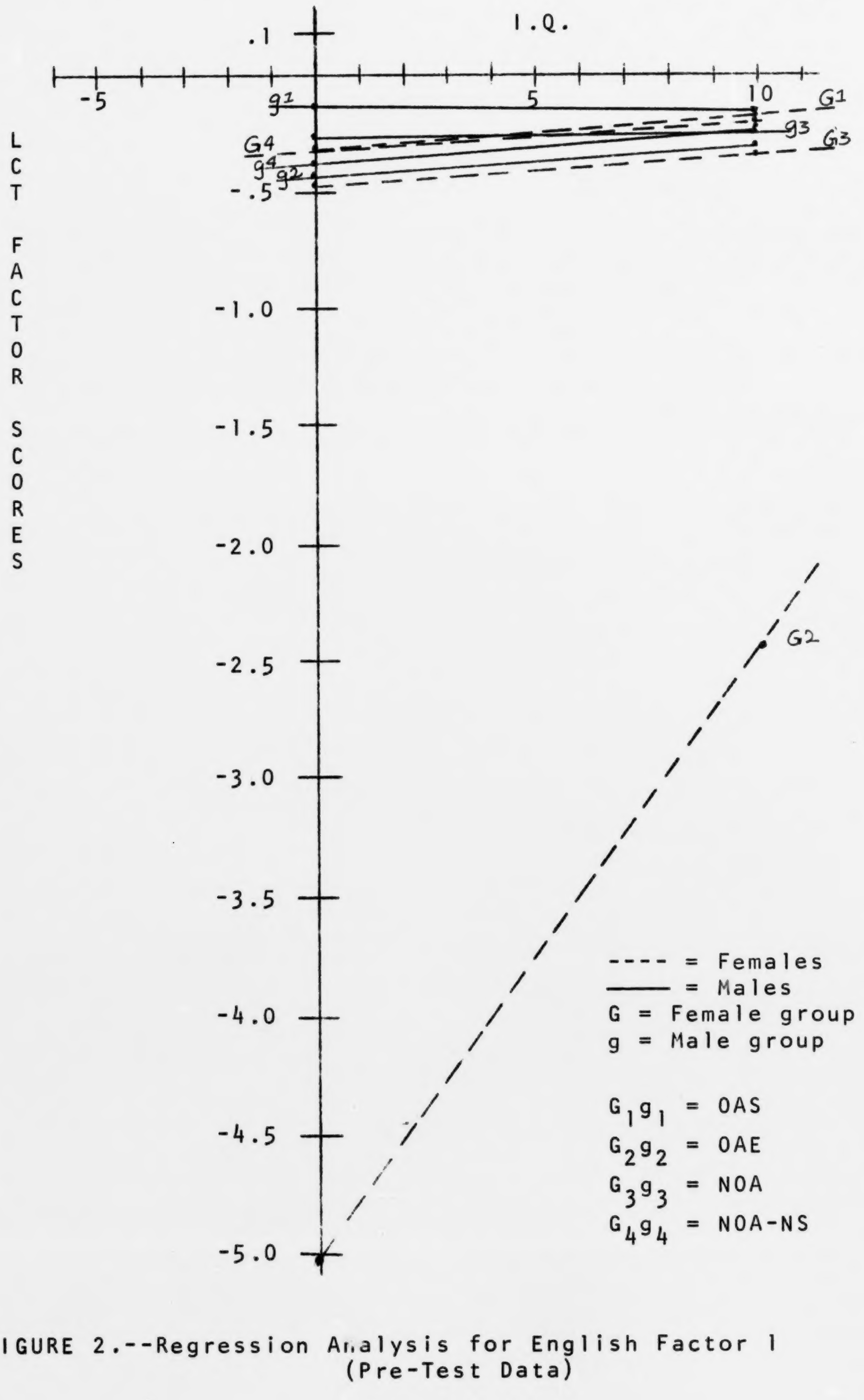

FIGURE 2.--Regression Analysis for English Factor 1
(Pre-Test Data)

Test of Hypotheses, English Factor 4. As in Factor 1, the test for the null-hypothesis 1 for this factor was rejected. The F-ratio was 3.40; p = .003. The slopes and their significance are shown in Figure 3. From this graph, the following information can be obtained:

The regression line for NOA males clearly indicated a negative relationship to the I.Q. covariable. The other regression lines expressed that the differences in their slopes were minimal.

Test of Hypotheses, English Factor 5. The test for the null-hypothesis for this factor was accepted. The subsequent tests that followed indicated that the null-hypotheses could not be rejected.

Test of Hypotheses, English Factor 6. The tests for Hypothesis 1a, 1b, and 1d were accepted and only Hypothesis 1c was rejected. This indicated that within each sex, there was a difference between LCT factor scores of the four groups. The F-ratio for this test was 3.06; p = .032. (See Table 9.)

Concerning English Factor 6, the adjusted means for the groups show that the major significance for this hypothesis was caused by NOA-NS males and OAE females. (See Table 9.)

Results from Tests of Hypothesis 2 (Repeated Measurement Analysis of Variance)

This section presents and discusses the major findings that were obtained from the tests of Hypothesis 2 using a repeated measurement analysis of variance. Hypothesis 2 states that there are no significant differences between group means as a function of treatment.

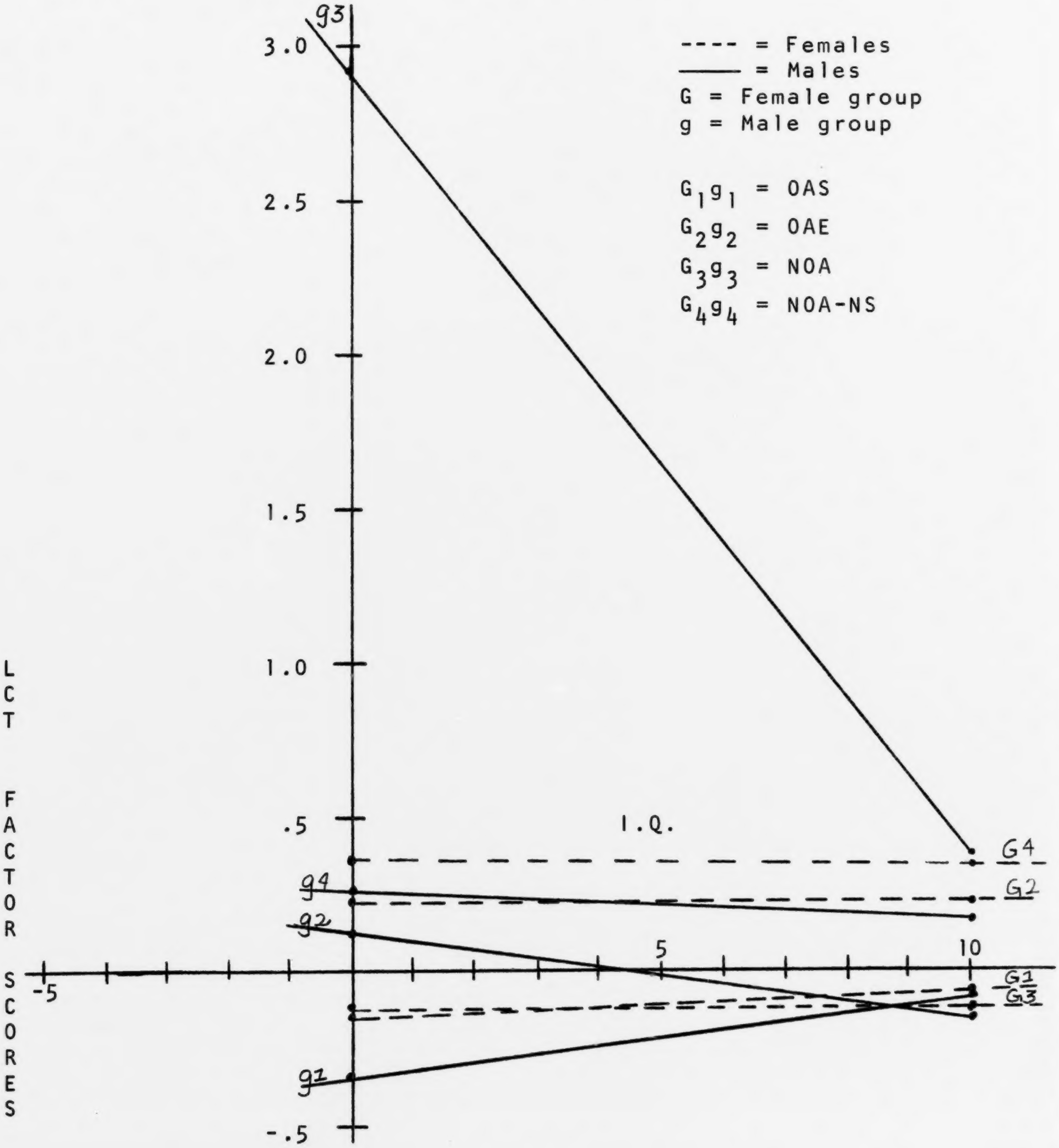

FIGURE 3.--Regression Analysis for English Factor 4
(Pre-Test Data)

Before performing the analysis mentioned, it became necessary to apply the factor weights obtained from the pre-test factor analysis to the post-test variables. This procedure was obligatory in order to make the two sets of factor scores (both pre and post) comparable and therefore feasible to perform the repeated measurement analysis of variance. This analysis was then used for the tests of Hypothesis 2 which involved the comparison of the LCT factor scores (dependent variables) derived from the twenty-two linguistic variables from both pre- and post-testing phases with the variables of time, group, and sex (independent variables) separately for each administration (Spanish and English). The findings for this section are presented in Tables 10 through 23, where sex, groups, and testing periods are compared. Their discussion follows.

For each of twelve factors (six in Spanish and six in English) obtained during the pre- and post-testing phases, the following three null-hypotheses were tested:

Hypothesis 2a: There are no differences between the LCT factor scores at T_1 (pre-test) and T_2 (post-test) for each sex.

Hypothesis 2b: There are no differences between the LCT factor scores at T_1 and T_2 for each group.

Hypothesis 2c: There are no differences between the LCT factor scores at T_1 and T_2 for each sex-group combination.

Rejection of the null-hypotheses was made at .05 level of significance.

Test of Hypotheses, Spanish Factors 1 and 2. The null hypotheses 2a (that there are no differences between the LCT factor scores at T_1 (pre-test) and T_2 (post-test) for each sex), 2b (that there are no differences between the LCT factor

TABLE 10

REPEATED MEASUREMENT ANALYSIS OF VARIANCE FOR SPANISH FACTOR 1

(Comparing Sex, Treatment, and Testing Periods)

Source	M.S.	D.F.	F-Ratio	p
Total	.615	127		
Between	.731	63		
A (Sex)	1.021	1	1.92	.17
B (Treatment)	2.957	3	5.55	.002
AB	2.111	3	3.96	.01
(E) (Error)	.533	56		
Within	.501	64		
C (Testing periods)	.660	1	1.29	.26
AC	.122	1	.24	.63
BC	.480	3	.94	.57
ABC	.433	3	.85	.52
(E)	.510	56		

TABLE 11

REPEATED MEASUREMENT ANALYSIS OF VARIANCE FOR SPANISH FACTOR 2

(Comparing Sex, Treatment, and Testing Periods)

Source	M.S.	D.F.	F-Ratio	p
Total	1.068	127		
Between	1.099	63		
A (Sex)	.046	1	.04	.83
B (Treatment)	1.765	3	1.66	.19
AB	1.418	3	1.33	.27
(E) (Error)	1.065	56		
Within	1.037	64		
C (Testing periods)	.410	1	.40	.54
AC	.735	1	.72	.59
BC	.575	3	.56	.65
ABC	1.999	3	1.95	.13
(E)	1.027	56		

scores at T_1 and T_2 for each group), and 2c (that there are no differences between the LCT factor scores at T_1 and T_2 for each sex-group combination) for both of these factors were accepted. Respectively the F-ratios and probabilities for Factor 1 were: F-ratio = .24; p = .63, F-ratio = .94; p = .57, F-ratio = .85; p = .52 (see Table 10), and for Factor 2, they were: F-ratio = .72; p = .59, F-ratio = .56; p = .65, F-ratio = 1.95; p = .13 (see Table 11). By accepting the null-hypotheses, these two factors revealed that there were no significant differences between the LCT factor scores and the variables of sex, group, or sex-group combination at T_1 and T_2.

Test of Hypotheses, Spanish Factor 3. The first and last null-hypotheses (2a; 2c) for this factor were accepted. (See Table 12.) Null-hypothesis 2b (that there are no differences between the LCT factor scores at T_1 and T_2 for each group) was rejected. F-ratio was 3.65; p = .02. Table 13 reports the mean for each group that was obtained for this factor when the comparison was performed. From this table the following information can be obtained.

Mean increases over time were not the same for the four groups. The NOA-NS group was found to be the group showing the greatest increase (.74) over testing periods for this particular factor. This factor was previously described in this chapter as the Single Words and Sentence Fragments Factor.

Test of Hypotheses, Spanish Factors 4 and 5. The analysis performed on these two factors revealed that the three null-hypotheses were accepted, again indicating no significant differences between the LCT factor scores and considering the independent variables of sex, group, or sex-group combination at T_1 and T_2. The F-ratios and probabilities for these two factors are reported in Tables 14 and 15.

TABLE 12

REPEATED MEASUREMENT ANALYSIS OF VARIANCE FOR SPANISH FACTOR 3
(Comparing Sex, Treatment, and Testing Periods)

Source	M.S.	D.F.	F-Ratio	p
Total	.976	127		
Between	.983	63		
A (Sex)	.045	1	.05	.82
B (Treatment)	.417	3	.45	.72
AB	3.024	3	3.29	.03
(E) (Error)	.920	56		
Within	.971	64		
C (Testing periods)	.604	1	.68	.58
AC	.111	1	.12	.73
BC	3.258	3	3.65	.02
ABC	.526	3	.59	.63
(E)	.894	56		

TABLE 13

GROUP MEANS FOR HYPOTHESIS 2b
(Group x Time Interaction)
SPANISH FACTOR 3

Group	T_1 (Pre-Test)	T_2 (Post-Test)	Difference
	Mean	Mean	
OAS	.3073	.0718	-.2355
OAE	.1073	-.1625	-.2698
NOA	.3515	-.4349	-.7864
NOA-NS	-.4164	.3256	.7420[a]

[a] Indicates group showing greatest increase over testing periods.

TABLE 14

REPEATED MEASUREMENT ANALYSIS OF VARIANCE FOR SPANISH FACTOR 4
(Comparing Sex, Treatment, and Testing Periods)

Source	M.S.	D.F.	F-Ratio	p
Total	.906	127		
Between	.883	63		
A (Sex)	.080	1	.11	.74
B (Treatment)	2.876	3	3.88	.01
AB	1.797	3	2.42	.07
(E) (Error)	.742	56		
Within	.929	64		
C (Testing Periods)	.225	1	.25	.62
AC	1.303	1	1.46	.23
BC	1.706	3	1.91	.14
ABC	.900	3	1.01	.40
(E)	.894	56		

TABLE 15

REPEATED MEASUREMENT ANALYSIS OF VARIANCE FOR SPANISH FACTOR 5
(Comparing Sex, Treatment, and Testing Periods)

Source	M.S.	D.F.	F-Ratio	p
Total	.710	127		
Between	.741	63		
A (Sex)	.424	1	.62	.56
B (Treatment)	1.627	3	2.38	.08
AB	1.024	3	1.50	.22
(E) (Error)	.684	56		
Within	.681	64		
C (Testing Periods)	.161	1	.22	.64
AC	.547	1	.75	.61
BC	.411	3	.57	.64
ABC	.338	3	.47	.71
(E)	.725	56		

Test of Hypotheses, Spanish Factor 6. Table 16 indicates that for this factor the first two null-hypotheses (2a and 2b) were accepted. The null-hypothesis 2c (that there are no differences between the LCT factor scores at T_1 and T_2 for each sex-group combination) was rejected. F-ratio was 3.21; p = .03. Figure 4 presents the information concerning this null-hypothesis. From this graph, the differences between sexes within the four treatment groups indicate that the differences for the pre-test are not the same as the differences for the post-test. In some cases a reversal pattern resulted, namely, that the pre-test mean for the groups (OAS, NOA, and NOA-NS females; OAE and NOA males) decreased at post-test time, while some groups (OAE females; OAS and NOA-NS males) indicated an increase.

Test of Hypotheses, English Factors 1, 2, 3, and 4. The three null-hypotheses for these factors were accepted indicating that there were no significant differences involved. The results obtained from the analysis of variance performed on these four factors are reported in Tables 17 through 20.

Tests of Hypotheses, English Factor 5. For this factor, two null-hypotheses (2a and 2c) were accepted. The differences between the LCT factor scores at T_1 and T_2 for each group indicated that null-hypothesis 2b was rejected. F-ratio was 4.65; p = .0060. (See Table 21.) The actual mean increase for each group over time (testing periods) is shown in Table 22. Again the NOA-NS group showed the greatest mean increase (.59) over testing periods for this factor. This factor has been described as Simple Transformational Sentences Factor.

Test of Hypotheses, English Factor 6. The three null-hypotheses for this factor were accepted. The complete results concerning the analysis performed for this factor are reported in Table 23.

TABLE 16

REPEATED MEASUREMENT ANALYSIS OF VARIANCE FOR SPANISH FACTOR 6
(Comparing Sex, Treatment, and Testing Periods)

Source	M.S.	D.F.	F-Ratio	p
Total	.988	127		
Between	.911	63		
A (Sex)	.025	1	.03	.87
B (Treatment)	1.411	3	1.51	.22
AB	.321	3	.34	.80
(E) (Error)	.931	56		
Within	1.064	64		
C (Testing Periods)	.896	1	.92	.66
AC	2.652	1	2.72	.10
BC	.161	3	.16	.92
ABC	3.133	3	3.21	.03
(E)	.916	56		

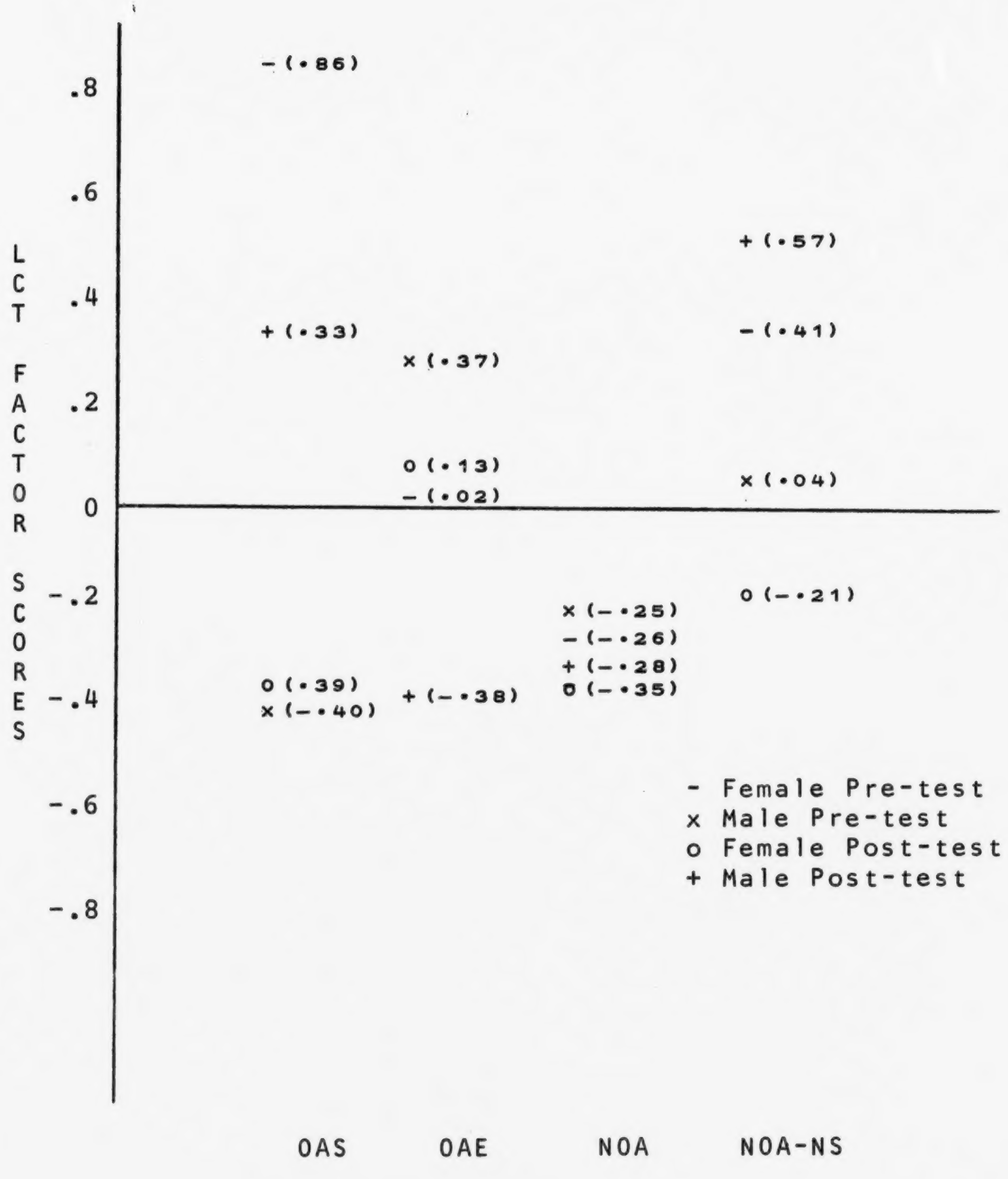

FIGURE 4.--Group Means for Hypothesis 2c
(Sex x Group x Time Interaction)
Spanish Factor 6

TABLE 17

REPEATED MEASUREMENT ANALYSIS OF VARIANCE FOR ENGLISH FACTOR 1
(Comparing Sex, Treatment, and Testing Periods)

Source	M.S.	D.F.	F-Ratio	p
Total	1.110	127		
Between	1.264	63		
A (Sex)	.008	1	.007	.93
B (Treatment)	6.509	3	6.19	.001
AB	.413	3	.39	.76
(E) (Error)	1.051	56		
Within	.958	64		
C (Testing Periods)	.296	1	.28	.60
AC	.142	1	.14	.71
BC	.631	3	.61	.62
ABC	.207	3	.20	.90
(E)	1.042	56		

TABLE 18

REPEATED MEASUREMENT ANALYSIS OF VARIANCE FOR ENGLISH FACTOR 2
(Comparing Sex, Treatment, and Testing Periods)

Source	M.S.	D.F.	F-Ratio	p
Total	.553	127		
Between	.557	63		
A (Sex)	.452	1	.79	.62
B (Treatment)	.177	3	.31	.82
AB	.640	3	1.11	.35
(E) (Error)	.575	56		
Within	.549	64		
C (Testing Periods)	.799	1	1.35	.25
AC	.727	1	1.23	.27
BC	.071	3	.12	.95
ABC	.071	3	.12	.95
(E)	.593	56		

TABLE 19

REPEATED MEASUREMENT ANALYSIS OF VARIANCE FOR ENGLISH FACTOR 3
(Comparing Sex, Treatment, and Testing Periods)

Source	M.S.	D.F.	F-Ratio	p
Total	1.004	127		
Between	.954	63		
A (Sex)	.002	1	.001	.96
B (Treatment)	.578	3	.64	.60
AB	2.467	3	2.71	.05
(E) (Error)	.910	56		
Within	1.053	64		
C (Testing Periods)	1.868	1	1.94	.17
AC	1.764	1	1.83	.18
BC	.792	3	.82	.51
ABC	2.496	3	2.59	.06
(E)	.963	56		

TABLE 20

REPEATED MEASUREMENT ANALYSIS OF VARIANCE FOR ENGLISH FACTOR 4
(Comparing Sex, Treatment, and Testing Periods)

Source	M.S.	D.F.	F-Ratio	p
Total	.588	127		
Between	.590	63		
A (Sex)	.614	1	1.11	.30
B (Treatment)	1.095	3	1.98	.13
AB	.775	3	1.40	.25
(E) (Error)	.553	56		
Within	.586	64		
C (Testing Periods)	1.417	1	2.71	.10
AC	1.722	1	3.30	.07
BC	.457	3	.88	.54
ABC	1.242	3	2.38	.08
(E)	.522	56		

TABLE 21

REPEATED MEASUREMENT ANALYSIS OF VARIANCE FOR ENGLISH FACTOR 5
(Comparing Sex, Treatment, and Testing Periods)

Source	M.S.	D.F.	F-Ratio	p
Total	.716	127		
Between	.692	63		
A (Sex)	1.014	1	1.66	.20
B (Treatment)	1.597	3	2.62	.06
AB	1.220	3	2.00	.12
(E) (Error)	.610	56		
Within	.739	64		
C (Testing Periods)	.955	1	1.51	.22
AC	.955	1	.12	.73
BC	2.949	3	4.65	.006
(E)	.635	56		

TABLE 22

GROUP MEANS FOR HYPOTHESIS 2b
(Group x Time Interaction)
ENGLISH FACTOR 5

Group	T_1 (Pre-Test)	T_2 (Post-Test)	Difference
	Mean	Mean	
OAS	-.1507	-.5027	-.3510
OAE	-.1691	-.2335	-.0644
NOA	.6171	-.2481	-.8652
NOA-NS	-.3078	.2826	.5904[a]

[a] Indicates group showing greatest increase over testing periods.

TABLE 23

REPEATED MEASUREMENT ANALYSIS OF VARIANCE FOR ENGLISH FACTOR 6

(Comparing Sex, Treatment, and Testing Periods)

Source	M.S.	D.F.	F-Ratio	p
Total	1.107	127		
Between	.801	63		
A (Sex)	.042	1	.05	.81
B (Treatment)	1.145	3	1.42	.24
AB	.618	3	.76	.52
(E) (Error)	.806	56		
Within	1.409	64		
C (Testing Periods)	.586	1	.40	.54
AC	.165	1	.11	.73
BC	1.930	3	1.31	.28
ABC	.320	3	.22	.88
(E)	1.476	56		

Correlation Between LCT Factors and Scores from Inter-American Tests of Reading

As stated in Chapter III, the Inter-American Test of Reading, Primary-Level 1, Form CEs (Spanish) and Form DE (English) was administered to the subjects to determine the extent to which the scores obtained in reading would correlate with factors secured for the LCT. The correlations were done separately for each of the six factors (in Spanish and English) and the scores obtained in reading (in Spanish and English respectively). The correlations performed are reported in Tables 24 and 25.

Table 23 indicates that two factors in Spanish have low positive correlations with reading. Factor 1 (General Sentences and Transformations Factor) has the highest positive correlation with the Inter-American Test of Reading (.3910). Factor 2 (Transformations and Complex Sentences Factor) is next highest with a correlation of .2157. The correlations of the other factors were non-significant.[1] Hence, it can be stated that children who scored high in Factors 1 and 2 may also do better in reading.

Table 25 indicates also that two factors in English have low positive correlations with reading, Factor 1 (General Sentences Factor) and Factor 3 (Complex Sentences and Simple Transformations Factor). Again the same interpretation can be made on these two factors as stated above. Correlation for English Factor 1 was .4160 and for English Factor 2 was .3789. Correlations were significant at the .05 level.

The summary, conclusions, and implications for the study are reported and discussed in Chapter V.

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[1] Allen L. Edwards, Statistical Methods for the Behavioral Sciences, Holt, Rinehart and Winston, New York, 1964, p. 502. Information was derived from Table 6, Values of the Correlation Coefficient for Different Levels of Significance.

TABLE 24

CORRELATIONS BETWEEN LCT SPANISH FACTORS AND INTER-AMERICAN TEST OF READING

Factor	Correlation
1	.3910
2	.2157
3	-.0969
4	.0823
5	-.1747
6	-.0976

TABLE 25

CORRELATIONS BETWEEN LCT ENGLISH FACTORS AND INTER-AMERICAN TEST OF READING

Factor	Correlation
1	.4160
2	.0388
3	.3789
4	.1052
5	-.1476
6	-.0460

CHAPTER V

SUMMARY, LIMITATIONS, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This study was designed to investigate the status of some basic syntactical structures of the oral language development that disadvantaged first-grade Spanish-speaking children possess in Spanish and English. Specifically, this study consisted of an intensive comparative analysis of selected basic sentence patterns and transformations in Spanish and English manifested in the responses of the subjects at the beginning and at the end of the first grade. In order to obtain these responses, the first section of the Language-Cognition Test was administered twice, in both Spanish and English, to each subject at pre- and post-testing time. An ancillary task of the investigation was to field-test the first section of the Language-Cognition Test (Spontaneous Language). This section of the test purported to measure the status of oral language development through a linguistic analysis of the selected basic sentence patterns and transformations present in the oral responses of primary grade children. The hypotheses for this study were designed to test for similarities and differences that would be present in the oral language, Spanish and English, of four experimental teaching groups (OAS, OAE, NOA, NOA-NS) made up of disadvantaged first-grade Spanish-speaking children.

The subjects for this study were chosen in the fall of 1966 from five of nine elementary schools in the San Antonio Independent School District, San Antonio, Texas, participating in The University of Texas at Austin Language Research Project. The pupils were randomly selected from twenty-three first-grade classrooms with an equal N assigned to each treatment. None of the students had had any previous first-grade instruction prior to entering school. The original sample consisted of eighty-eight students (twenty-two in each of the four groups). Owing to pupil attrition, the number of subjects on whom pre-test data was available decreased at post-test time. In order to maintain an equal number of subjects (equally divided by sex) in each group, the remainder of these students were randomly eliminated from the data analyses and the final sample consisted of sixty-four students (sixteen in each of the four groups). The final analyses were performed on this latter sample. Each subject was a native speaker of Spanish and was considered to be disadvantaged.

The methods and procedures for this study were divided into three phases. In the first phase, the evidence of syntactical structures manifested in the oral language of the four groups at the pre-testing phase was secured. This procedure was necessary to perform the intensive comparative analysis required by the general problem and to test the first general hypothesis, i.e., that there were no significant initial differences between groups, including sex, in pre-test scores.

The second phase, post-testing, consisted of data secured from the groups after each group had been instructed for one academic year (120 days) according to its own designated treatment. These first two phases were required to provide the necessary information for identifying and quantifying the distinguishing characteristics in the responses of the four groups.

Results from the second phase led to the third phase which consisted of obtaining the comparative data to test the second general hypothesis. Securing a comprehensive description of the basic syntactical structures and some transformations contained in the oral responses of the subjects was a prerequisite for the planned intensive comparative analysis. To facilitate this description, the Linguistic Analysis Form was designed by this author to accomplish such a task. This form consisted of twenty-two linguistic variables. Subsequently, it became apparent that to reduce the number of variables to a manageable number, a factor analysis was required. This type of analysis, in turn, yielded the factor scores (at both pre- and post-testing phases) for each subject and were used in the subsequent statistical analyses. An analysis of covariance utilizing multiple linear regression, was used to test the first hypothesis that there were no significant initial differences between groups, including sex, on the fall (pre-testing) scores. This analysis provided the relationship of I.Q. to the factor scores derived from the factor analysis that had been performed earlier. To determine whether or not there were any significant differences between the four treatment groups on the basis of I.Q. at pre-test time, the I.Q. scores obtained from the Goodenough-Harris were compared. This comparison indicated that there were no significant initial I.Q. differences between the four groups. The repeated measurement analysis of variance was used to compare the performances (pre- and post-testing) of the four groups on the various characteristics contained in the second hypothesis (that there are no significant differences between group means and function of treatment).

Findings

In general, the hypotheses constructed for this investigation were supported by the results. In summarizing the findings, the numbers and letters used below correspond to the specific hypotheses to which these findings pertain. The LCT scores consisted of the factors secured from the factor analysis and are applicable to the findings. They are listed as follows:

Spanish

Factor 1--General Sentences and Transformations Factor
Factor 2--Functionally Complete Sentences Factor
Factor 3--Basic Sentences with English Loan Words Factor
Factor 4--Single Words Factor
Factor 5--Correct Verb Usage Factor
Factor 6--Combined Complete and Incomplete Basic Sentences Factor

English

Factor 1--General Sentences Factor
Factor 2--Passive Transformations Factor
Factor 3--Sentence Fragments Factor
Factor 4--Functionally Complete Sentences Factor
Factor 5--Simple Transformations Factor
Factor 6--Lack of Negative Transformations Factor

1. The majority of the findings for the tests of Hypothesis 1 revealed that there were no significant initial differences between groups, including sex, in fall LCT factor scores considering I.Q. as a covariable.

a. The covariance analyses performed separately on each factor revealed that of the twelve factors, only three indicated a significant difference between groups when null-hypothesis 1a (that the slopes, due to amount of change in criterion per unit of I.Q. for each of the eight groups are the same throughout the range of I.Q.) was tested. Specifically, the three factors were: Spanish Factor 1 (General Sentences and Transformations Factor), and English Factors 1 (General Sentences Factor) and 4 (Functionally Complete Sentences Factor). The F-ratios and probabilities for for each factor respectively were: F = 3.28; p = .005; F = 3.18; p = .005; and F = 3.40; p = .003. The groups which contributed the most to the significant difference in Spanish Factor 1 were the NOA-NS females and NOA males. For the NOA-NS females a slight positive relationship between the variables of I.Q. and LCT factor scores was shown; for the NOA males there was a large positive relationship between the two variables. For English Factors 1 and 4, the groups probably responsible for the significant differences were the OAE females and the NOA males respectively. The OAE females showed a large positive relationship and the NOA males showed a large negative relationship between the variable of I.Q. and LCT factor scores.

b. The null-hypothesis 1b (that the differences on LCT factor scores between males and females in every group is the same considering I.Q. as a covariable) was accepted when the analysis was performed for every factor.

c. For Hypothesis 1c (that within each sex, there is no difference between the LCT factor scores of the four groups considering I.Q. as a covariable), four factors (three in Spanish and one in English) rejected this hypothesis. These factors were: Spanish Factors 2 (Functionally Complete Sentence Factor), 5 (Correct

Verb Usage Factor), and 6 (Combined Complete and Incomplete Basic Sentences Factor) and English Factor 6 (Lack of Negative Transformations Factor). The F-ratios and probabilities were: Spanish Factor 2, F = 6.09; p = .001; Spanish Factor 5, F = 2.71; p = .05; Spanish Factor 6, F = 3.07; p = .03. The F-ratio and probability of English Factor 6 was F = 3.06; p = .03. The adjusted means at pre-test time for Spanish Factor 2 indicated that the major significance obtained was probably caused by three groups, NOA males, OAS males, and OAE females; for Spanish Factor 5 the difference was caused by OAE males and OAE and NOA females; for Spanish Factor 6, OAE males and OAE and NOA-NS females contributed the major significance. In the case of English Factor 6, the adjusted means for the groups showed that the difference was caused by NOA-NS males and OAE females.

d. The only factor for which Hypothesis 1d (that within each treatment there were no significant differences between males and females considering I.Q. as a co-variable) was significant was Spanish Factor 4. The F-ratio was 5.20; p = .02. Adjusted group means indicated that the females (three out of four groups) are different from their male counterparts. The adjusted means for OAS and NOA-NS females are much lower and for OAE females the adjusted means are higher. Rejection of the null-hypothesis was made at the .05 level of significance.

2. The majority of the findings for tests of Hypothesis 2 (that there will be no significant differences between group means as a function of treatment) revealed substantial evidence for the acceptance of the null-hypothesis. A repeated measurement analysis of variance was used to test the

results from the separate comparisons between the pre- and post-factor scores and the variables of sex, group, and time for each administration.

a. Hypothesis 2a (that there will be no differences between the LCT factor scores at pre- and post-testing time for each sex) was accepted for each of the twelve factors.

b. Hypothesis 2b (that there will be no differences between the LCT factor scores at T_1 and T_2 for each group) was accepted for all but two of the twelve factors. Specifically, these two factors were: Spanish Factor 3 (Basic Sentences with English Loan Words Factor) and English Factor 5 (Simple Transformations Factor). Table 12 showed that the group contributing to the rejection of the hypothesis for Spanish Factor 3 was the NOA-NS group. The means for this group indicated the greatest increase in mean over testing period. This finding indicated that the NOA-NS group at the end of the first year was still using more basic sentences in Spanish with English loan words. Table 20 revealed that for English Factor 5, the group showing the greatest increase was again the NOA-NS group. This finding indicated that the children in this group had increased in their usage of simple transformations at the end of the first year.

c. Hypothesis 2c (that there will be no differences between the LCT factors at T_1 and T_2 for each sex-group combination) was accepted by all twelve factors except Spanish Factor 6, described as Combined Complete and Incomplete Basic Sentences Factor. The differences between sexes within the four treatment groups were indicated by their differences between pre- and post-test means. The pre-test mean for OAS, NOA, and

NOA-NS females, and OAE and NOA males decreased at post-test time, while OAE females and OAS and NOA-NS males indicated an increase. Rejection of the null hypotheses was made at the .05 level of significance.

3. Correlations done between the Inter-American Test of Reading, Primary Level 1, Form CEs (Spanish) and Form DE (English) and the results from the first section of the Language-Cognition Test revealed that for two factors in Spanish and two factors in English low positive correlations were present. Specifically, these factors were: Spanish Factors 1 and 2 (General Sentences and Transformations Factor and Transformations and Complex Sentences Factor) and English Factors 1 and 3 (General Sentences Factor and Complex Sentence and Simple Transformations Factor). The correlations were significant at the .05 level. The correlations for Spanish Factor 1 was .3910 and for Spanish Factor 2 was .2157; for English Factor 1 was .4160 and for English Factor 3 was .3789.

Limitations

Before stating the several conclusions which can be reasonably supported by the above findings, the limitations for this study must be mentioned.

1. The findings that have been obtained for this study are directly applicable only to Spanish-speaking children.

2. Considering the age-level (6-year-olds) of the subjects in the study, any conclusions about the oral language development of this sample cannot be generalized to older age-level groups. The results are only applicable to young children who also are learning English as a second language.

3. The extremely fundamental nature of the basic sentences and the few transformations employed in the linguistic categories contained in the Linguistic Analysis Form did not, apparently permit linguistic distinctions among the groups to be arrived at statistically. Although this might have been predicted for normal monolingual subjects of this age, there was no evidence that it was necessarily true of bilinguals, particularly in a disadvantaged area. Consequently, any future analysis will have to employ more sophisticated linguistic categories (embeddings in particular, for syntax) and a much more in-depth semantic analysis.

4. The time-consuming nature of the linguistic analysis performed and the time-consuming nature of administration of the test raise a feasibility question for its use by classroom teachers. For research purposes, the linguistic analysis was feasible but it poses an interpretation problem for teachers and/or school administrators.

Conclusions

Bearing in mind the above-noted limitations and that this study was exploratory, several tentative conclusions are supported by the results.

1. The first section, Spontaneous Language, of the Language-Cognition Test, although not having been previously tested, did yield evidence of oral language judging by the considerable number of responses obtained in each linguistic category for each subject. Additionally, it was possible to analyze and classify the responses according to their syntactical characteristics. This section of the test also proved to have great appeal for children, judging from the enthusiasm that was expressed toward the items and pictures used to elicit "free" responses.

2. The fact that only three factors rejected the tests for Hypothesis 1 leads to the conclustion that there was little differential relationship between the LCT factor scores and I.Q., as measured by the Goodenough-Harris, when considering only the syntactical structure of language and not its meaningful content. In general the groups were found to be relatively similar in their linguistic performance. This conclusion can probably be accounted for by the kind of scoring used for the linguistic aspect of the task required in the first section of the test. That is, there were no "right" answers involved; the items were used only to elicit as many oral responses of any nature as possible from the subject.

3. Judging from the evidence obtained from the majority of the findings supporting Hypothesis 2 (that there were no significant differences between groups at pre- and post-testing time as a function of treatment), it would appear that regardless of the treatment used the results obtained will be essentially the same. There would seem to be several possible explanations for this conclusion. First, since all the groups are being taught with essentially the same program except for the intensive one-hour-per-day instruction in oral language for the OAE and OAS groups, the opportunities for differences in oral language to be expressed by the four treatment groups would probably be minimal during the first year of academic training. Second, it appears possible that the oral language program in its present stage is not intensive enough in its coverage of the level of syntactic maturity of which the child of this age is capable, i.e., simple relative transformations, simple deletions, and so on). Third, insufficient transfer of these types of sentences into other general areas, i.e.. fields other than science and the self-concept, which the Spontaneous Language Section of the LCT explored, may have occurred. Finally, it

is possible that the syntactical analysis performed may not have had sufficient depth to encompass all the differences manifested in the responses of the subjects being tested.

4. With reference to Spanish Factor 3, Basic Sentences with English Loan Words, for which significant differences were found, it would appear that since Spanish is not used for any instructional purposes and its usage is usually suppressed in the schools outside the research project, the NOA-NS group had to rely on words learned only in English to describe objects or events in Spanish. On the other hand, Spanish in the project schools has been accorded a place by permitting its use in an experimental situation. With this in mind, children in the other two treatment groups that are not being instructed in Spanish are usually quite aware of this fact through their association with children in the OAS treatment and presumably may have learned additional Spanish vocabulary from them.

5. English Factor 5, Simple Transformations provided significant differences again in favor of the NOA-NS group. From these findings, it would seem that the existing regular program makes more provisions for learning simple transformations, i.e., imperative and interrogative, through the constant demands that are required to carry on classroom work than might be anticipated.

6. From the factors yielding low positive correlations obtained between the Inter-American Test of Reading and the first section of the LCT, it can be concluded that a knowledge of the general basic sentences and transformations does not guarantee success in beginning reading as measured by the Inter-American test. However, children who scored high in Spanish Factors 1 and 2, and English Factor 3, may also do better in reading than children who do not.

Recommendations

Based on the results of this study, it is recommended that:

(1) A further study be done with a more complicated linguistic analysis of the responses obtained which could possibly yield more clearly defined general differences in the status of the oral language of the subjects than this study has done.

(2) Existing programs utilizing intensive oral language instruction make additional provisions in their teaching procedures during the first year to include much more sophisticated transformations.

(3) Provisions be made to permit intensive language instruction, in both languages, to combine more content areas and be allowed to continue for a period longer than one hour.

(4) Further studies to test validity and reliability of the LCT and the establishment of norms for this population are needed.

(5) Additional research be undertaken to assess the adequacy and applicability of the LCT to other populations besides the Spanish-speaking, e.g., Indian, Negro, Louisiana Cajun, or English-speaking disadvantaged.

APPENDICES

A. The LCT, Language-Cognition Test (Research Edition)

B. Directions for First Section, Spontaneous Language, of the Language-Cognition Test (English)

C. Directions for First Section, Spontaneous Language, of the Language-Cognition Test (Spanish)

D. Rationale for Language-Cognition Test (LCT) Linguistic Analysis Form

E. Language-Cognition Test Linguistic Analysis Form (English and Spanish)

F. Coding for the Analysis of the Spontaneous Language Section-LCT (English and Spanish)

G. Rotated Factor Loadings for LCT Factor Scores in Spanish Administration (Pre-Data)

H. Rotated Factor Loadings for LCT Factor Scores in English Administration (Pre-Data)

I. Rotated Factor Loadings for LCT Factor Scores in Spanish Administration (Post-Data)

J. Rotated Factor Loadings for LCT Factor Scores in English Administration (Post-Data)

THE LCT, LANGUAGE-COGNITION TEST (RESEARCH EDITION)
A TEST FOR EDUCATIONALLY DISADVANTAGED
SCHOOL BEGINNERS

by

Anne O. Stemmler, Ph.D.

Introduction

Despite the literature burgeoning in the area of educational disadvantagedness, there appears to be a notable lack of appropriate measures for systematically assessing the cognitive-language status of beginning students who are designated as educationally disadvantaged. Often using measures designed for other populations, evidence has accrued as to the general inability of disadvantaged children to become committed to and to perform the tasks set for them by the school and the inability of the school to provide suitable tasks for these children. Such results are not too helpful to school personnel who are already fully aware of the general situation. Instead, what is needed are clear and specific sets of guidelines to help them in planning suitable programs. For example, no teacher needs a standardized readiness test score to tell her that a child is not ready for reading when he cannot attend for five minutes to what she is saying, cannot follow directions, or cannot communicate in the particular language used in the school. She knows the child is "not ready," but this is only a part of the issue. The real issue is how unprepared is "not ready," anyway--and what specifically are we going to do about it?

For education, then, the problem in measurement would appear to be two-fold for disadvantaged children in the beginning grades: (1) without measures and techniques which clearly reveal the specific characteristics of the level(s) at which these children are operating, it is exceedingly difficult for a teacher to know with any confidence where to begin; and (2) not knowing where to begin makes it nearly impossible for school personnel to plan a systematically sequenced program which will have real appeal to and be appropriate for the children for whom it is intended.

It was with the idea of attempting to provide at least a part of the answer to this twofold problem and the specific set of insights needed that the LCT, Language-Cognition Test, came into being. . . .

Purposes of and Rationale for the LCT

One major purpose of the LCT is to provide an estimate of a child's present status of development into areas considered to be closely associated with success or failure in academic learning, namely, language and cognition. That is, the LCT attempts to sample a child's (1) knowledge of language through his use of it (syntax of a language) and (2) his knowledge and use of concepts or categories, relationships, and general cognitive methods as they are manifested in the language he uses (cognition).[1] The second major purpose is to be able eventually to provide a specific interpretative "profile" of a child's status in these two areas to assist school personnel in accurately assessing his current status and hence to provide a clear basis for planning the kinds of learning experiences he needs.

The general conceptual and methodological bases for the LCT have been evolved both from research and writing in such areas as cognition, linguistics, child development, educational disadvantagedness, and general principles of test construction.[1] They are presented in summary form, as follows:

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[1] Scoring procedures for estimating extent of vocabulary development are also being planned using such possible reference indices as the Dolch 220 Sight Words, Ninety-five Commonest Nouns, The Thorndike List, Children's Vocabulary.

1. Through responses made to a variety of familiar concrete and pictorial stimuli, an estimate of a child's knowledge of and proficiency with the basic syntax of a language can be secured.

2. The basic types of sentence patterns and fundamental transformations within Spanish and English have been identified and can be used in analyzing children's responses to stimuli.

3. Types of concepts likely to be known by children at various age levels have been identified.

. . . .

6. A test should have a sufficient number of items to provide a reasonably reliable sample of the behaviors being studied.

7. The directions, tasks, and arrangement of items should be appropriate both to the variables under study and the characteristics of the subjects who are to be involved. In testing young children, the importance of feeling at ease, being encouraged to respond, and being praised by the examiner are critical.

8. When a variety of appropriate responses are being sought, the task directions should be open-ended; where a specific kind of response is being sought, the task directions should be quite precise and structured for the one best answer.

The above set of generalizations do not constitute all which might be noted. However, they give an indication of the range and variety of principles from which the support for the construction of the LCT was drawn.

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[1] Among the writers and researchers used were Bettelheim; Bloom and Broder; Chomsky; Deutsch; Gagne; Heidbreder and Heidbreder; Lado; Piaget; Rapaport; Reissman; Russell; Stockwell, Bowen, and Martin; and Cronbach.

Description of the LCT

The LCT is to be administered on an individual basis with an examiner occupying much the same role as does an examiner using the WISC (Wechsler Intelligence Scale for Children) or the ITPA (Illinois Test of Psycholinguistic Abilities). The entire test is available in both English and Spanish and has two general parts. The first part is termed, "Spontaneous Language," and the second, "Methods of Thinking." The examiner records a child's responses exactly as he gives them. At the present time, taped recordings of the children's responses are being made so that an examiner can check on the accuracy of the written record made. The description of and scoring for the two parts are presented below.

Part I: Spontaneous Language

In this part, the subject is presented with two kinds of tasks, using different stimuli.[1] For the first task, the child is given what should be familiar concrete objects (e.g., a cap, a ball, pencils), and simply asked to name the object(s) and to tell everything he can or knows about it or them. He may handle the objects and is encouraged to talk as much as he can. In responding, he reveals basic types of sentence patterns, fundamental transformations, verb usage, concepts, and relationships. There are five items for this task, excluding the practice item.

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[1] No test can probably ever be described as completely spontaneous--some task *must* be set. However, for this part of the test, the tasks are quite open-ended. Only a general direction is given for the items of the two tasks. A child in telling everything he knows or in making up his own story is "free" to express himself in his own way about each of the items. Hence, more spontaneity is built into the test than would be possible with specific questions which would "limit" or "structure" his responses.

For the second task, the child is handed a picture in which some action is occurring, e.g., a child delightedly hugging a new pair of shoes. He is then asked to make up a story that goes with the picture. The pictures were selected to provide situations with which children would presumably be familiar and for which they could create a sequence of events. In responding with a story, the child reveals basic types of sentence patterns with their transformations, verb constructions, adjectival usage, and the relationships of time sequence and cause and effect. If the child does not appear to understand this direction, he is asked to tell everything that is going on in the picture. If he cannot handle this task, he is simply asked to tell what he sees in the picture. In responding with only a description of what is happening in the picture or simply labeling the items in it, he reveals some basic types of sentence patterns, transformations, and concepts. Also, he manifests an inability to handle sequential and cause and effect relationships with regard to this task. There are six items for this task, excluding the practice item.

For the language aspect, the scoring procedures for Spontaneous Language have been derived from the basic types of sentence patterns and fundamental types of transformations described by Stockwell, Bowen, and Martin (1965, Ch. 2, 8).[1] These writers termed six kinds of simple active declarative sentences as "kernel sentences," viewing them "as grammatical patterns consisting of SLOTS, each of which is a place in the pattern at which substitutions of various appropriate lexical units can be made" (Stockwell, Bowen, and Martin, 1965, p. 18). For example, a child who responds to one of the items of this section, "The little girl fell down. She broke the bowl," is credited with having produced respectively examples of Type II and Type III sentences. However, a child who responds, "The bowl was broken by her," is credited with having produced a Type III sentence using a passive transformation. All responses are analyzed for the number and kinds of the following elements: (1) basic types of sentences; (2) fundamental transformations; (3) types of verb constructions used (e.g., present, past, future, conditional); and (4) adjectival usage. Also included in the analysis is the number of sentence fragments, "loan" words (i.e., borrowing a word from one language to substitute for a word unknown in the other, such as, "Este es un circle"); and one-word responses. A child's score depends upon both the number and variety of these elements. A child who produces both a great number and variety of these elements is considered to have a much better command of a particular language for organizing and expressing his needs and ideas than does a child with only a limited number and variety of the elements and many fragments and one-word responses.

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[1] A simplified language scoring procedure is also being considered which would only be concerned with categories of sentences (i.e., simple, compound, and complex), fragments, one-word responses, and verb constructions which might be used by teachers. The language analysis is being done by Albar A. Peña who also did the Spanish translation; the cognitive analysis by this writer.

DIRECTIONS FOR LANGUAGE-COGNITION TEST[1]

by

Anne O. Stemmler, Ph.D.

Part 1: Spontaneous Language

Directions to the Examiner (E):

1.1 For Practice Item:

(a) E hand the ball to Subject (S) and says: "Tell me what this is. Tell me everything you can about this." (E pauses) or . . . "What is this? Tell me all you know about this." "Go ahead and tell me whatever you know."

(b) If there is no response after approximately ten (10) seconds, E repeats: "Just tell me whatever you can/know."

If there is no response, begin first item of the test. Repeat the full directions.

(c) If S responds, E praises him, e.g., "That was very good/fine/excellent" . . . "Now, is there anything else you know that you can tell me about this" or . . . "Now, can you tell me any more about this?" (E points to ball again.)

E should continue to encourage S to answer and say everything he can about the object.

After S finishes his response, E again praises him.

1.2 Test

E hands the candies to S and follows exactly the same procedure as before:

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[1] Copyright, 1967, Anne O. Stemmler.

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"Tell me what these are. Now, tell me all you know/can about these." Or . . . "What are these? Now, tell me everything you know/can about these."

"Go ahead and tell me whatever you know/can."

E encourages S to try. If there is no response and S is encouraged, E hands the next item to the child and continues through the rest of the test.

Repeat the directions before each item unless S is moving easily through the test. Encourage S to respond whenever necessary. The following progression is to be used:

ball (trial item - no score)

1. candies
2. toy gun
3. cap
4. dishes
5. pencils

For the pictorial representations, use the same general procedure as for the concrete objects, e.g., encouragement, same time allotment, etc. The introductory directions to the pictures are:

"Now, look at this picture." "Tell me a story that you think goes with this picture." Or . . . "Make up your own story to go with this picture."

If subject does not respond or does not seem to understand the directions, then E says:

"Tell me everything that's going on in this picture."

Little boy and monkey (trial item - no score)

6. School scene
7. Girl and broken bowl
8. Child with new shoes
9. The "painted" dog
10. Mother crying
11. "Planning" scene

DIRECTIONS FOR LANGUAGE-COGNITION TEST[1]

(Spanish Form)

by

Anne O. Stemmler, Ph.D.

Parte Primera de la Prueba: Respuestas Espontáneas

Instrucciones para el examinador:

1.1 Ejercicio de Práctica:

(a) El examinador le da la pelota al niño y dice: "Dime qué es esto. Dime todo lo que puedas de esto." (El examinador pausa) o ... "¿Qué es esto? Dime todo lo que sabes de esto." "Anda, dime cualquier cosa que sepas de esto."

(b) Si acaso no hay ninguna respuesta después de aproximadamente diez (10) segundos, el examinador repite: "Dime lo que se te venga a la cabeza de esto." Si acaso el niño todavía no responde, comience con el primer objeto (artículo) de prueba. Repita las instrucciones como antes.

(c) Si acaso el niño responde, el examinador lo elogia, e.g., "Qué bien/ves como sí puedes decirme algo" ... "¿Ahora, hay algo más que sabes de esto que me quieras decir?" o ... "Ahora, dime todo lo demás que sabes de esto." El examinador debe animar al niño a que conteste y diga todo lo que pueda del objeto. Después de que el niño termine su respuesta, el examinador lo elogia otra vez.

1.2 La Prueba

El examinador le da los dulces al niño y sigue el mismo procedimiento de antes: "Dime qué son éstos. Ahora, dime todo lo que puedas de éstos" o ... "¿Qué son éstos?" "Ahora, dime todo lo que sabes de éstos." "Anda, dime cualquier cosa que sepas de éstos."

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[1] Copyright, 1967, Anne O. Stemmler. Spanish translation by Albar A. Peña.

El examinador debe animar al niño a que responda. Si acaso no hay respuesta después de que el niño sido animado, el examinador le da el siguiente objeto (artículo) y sigue con el resto de la prueba.

Repita las instrucciones antes de cada objeto (artículo) a no ser que el niño no las necesite porque ya sabe lo que se debe hacer. Anime al niño a responder cuando sea necesario. El siguiente orden para la presentación de los objetos debe ser observado:

Pelota (artículo de práctica)

1. dulces
2. pistola para jugar
3. gorra (cachucha)
4. vasijas
5. lápices

Para las representaciones pictóricas (retratos o fotos), use el mismo procedimeinto general que para los artículos y objetos concretos. Las primeras instrucciones para las fotos son:

"Ahora, fíjate en este retrato." "Quiero que hagas un cuento/historia que tú crees va con este retrato." "Haz el cuento como tú quieras y dímelo."

Si el niño no responde o no parece entender las instrucciones, repítalas otra vez o si no, diga: "Dime lo que crees que está pasando en este retrato."

El niño y el mono (para práctica)

6. Escena en la escuela
7. Una niña con el jarro roto
8. Un niño con zapatos nuevos
9. El perro "pintado"
10. Una madre llorando
11. Escena en el patio

RATIONALE FOR LANGUAGE-COGNITION TEST (LCT)

LINGUISTIC ANALYSIS FORM[1]

The Language-Cognition Test (LCT) is to be administered on an individual basis. It has two general parts. The first part is termed, "Spontaneous Language"; the second, "Methods of Thinking." Both parts are to be administered in English and Spanish. It is for the first part, "Spontaneous Language," that the Linguistic Analysis Form has been designed. The purposes of this form are twofold: (1) to show and describe the types of linguistic analyses to be done; and (2) to provide the frequency distribution of the various components of this analysis for each subject.

The major portion of this linguistic analysis consists of the six basic sentence patterns and five basic transformations, which were dictated by a preliminary survey of the pretrial runs, for both English and Spanish, as described by Stockwell, Bowen, and Martin in their book, The Grammatical Structures of English and Spanish. A survey of the literature revealed only two systematic grammatical contrastive studies of English and Spanish. One of these, by Lado, was too general for the purpose of this study. That is, it did not specify the most basic sentence patterns and transformations in the two languages. The other study, that of Stockwell, Bowen, and Martin, describes the six most basic sentence patterns which, for the purpose of this study, provide a basis for analysis of experimentally derived data. These patterns are also of the more general type, i.e., they avoid the extreme technicality needed to symbolize patterns of the more specific type. On the Linguistic Analysis Form, each pattern for the two languages is introduced with at least one example. The patterns of Spanish sentences are grouped and numbered so as to match them as closely as possible with the English patterns.

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[1] Rationale by Albar A. Peña.

With reference to the transformations stated in the analysis form, five were selected after examining the responses obtained during the trial administrations of the test. Also, an examination of the pre-test data was done which indicated that these transformations would be the most prevalent considering the types of responses elicited by the tasks of the "Spontaneous Language" section and the age level of the children involved.

While the basic types of sentence patterns and transformations constitute the main part of the analysis, additional categories have also been included for the following reasons. Judging from the literature rapidly accruing in the area of educational disadvantagedness (Reissman, Deutsch, Carroll, Davis) and personal observations from a current research project, it has been noted that culturally deprived children are non-verbal. When such children do speak, they tend to be fragmentary in their expressive language; make use of loan or borrowed words; possess very limited descriptive language; and, more often than not, utilize non-standard subject-verb agreement or verb usage. Therefore, it is anticipated that the following categories will yield actual research proof as to what extent the statements noted above exist in the expressive language of the disadvantaged Spanish-speaking children. The categories are as follows:

(1) Fragments--further broken down to include one-word utterances and functionally complete or incomplete sentences.

(2) Loan words--to include words borrowed from either language, English or Spanish, and words borrowed from English that have been hispanicized.

(3) Non-standard subject-verb agreement or verb usage.

(4) Adjectival usage.

(5) Although not actually stipulated, the number of compound and complex sentences as well as sentences using direct and indirect quotations will also be counted. These last observations will be included under "Notes," to augment further the linguistic analysis of the responses obtained from each subject.

The extent of the linguistic analysis done on each individual's response is specifically focused on the categories described above. These categories are noted on each Linguistic Analysis Form, both in English and Spanish.

LANGUAGE-COGNITION TEST LINGUISTIC ANALYSIS FORM

(English)

Name: School:

I. a. NP VP - be NP
(He is a boy.)
b. NP VP - be ADJ
(The milk was good.)
c. NP VP - be ADV
(The party will be at 5 o'clock.)

II. NP VP$_i$ (They never run to school.
She cooks for a living.)

III. a. NP VP$_t$ (PRT) NP:DO
(I don't speak Spanish.)
b. NP VP$_t$ NP:DO PRT
(He looked the answer up.)

IV. a. NP VP$_{io}$ NP:DO NO:DO
(They gave me the ball.)
b. NP VP$_{io}$ NP:DO to:NP:IO
(They gave the ball to me.)
c. NP VP$_{io}$ NP:DO for:NP:IO
(We built a house for him.)

V. a. NP VP$_{tc}$ NP:DO to:VP:Comp
(They asked him to go.)
b. NP VP$_{tc}$ to:VP:Comp
(They wanted [ ] to go.)
c. NP VP$_{tc}$ NP:DO ing:VP:Comp
(They saw him going.)
d. NP VP$_{tc}$ ing:VP:Comp
(They avoided going.)
e. NP VP$_{tc}$ NP:DO VP:Comp
(They watched him go.)
f. NP VP$_{tc}$ NP:DO (to be) NP:Comp
(They elected him [to be] president.)
g. Subj. VP$_{tc}$ NP:DO (to be) ADJ:Comp
(They thought him [to be] nice.)
h. NP VP$_i$ to:VP:Comp
(They are going to leave.)
i. NP VP - be:adj (for:NP) to:VP:Comp
(It is safe [for us] to go home.)
VP - say

VI. a. There VP-be NP indef. Adv. (There was a ghost in the house.)	
b. There VP-be NP indef. to:VP:Comp (There are many things to do.)	
VII. Transformations:	
a. Negation	
b. Interrogative	
c. Imperative Affirmative Negative	
d. Passive	
e. Subjunctive	
VIII. Fragments:	
a. One-word Utterance	
b. Functinally Complete Sentence	
c. Functionally Incomplete Sentence	
IX. Loan Words:	
a. Spanish	
b. English	
c. Hispanicized English Words	
X. Non-standard Subject-Verb Agreement or Verb Usage	
XI. Adjectival Usage	

XII. Notes:

Compound Sentences:

Complex Sentences:

Direct/Indirect Quotations:

LANGUAGE-COGNITION TEST LINGUISTIC ANALYSIS FORM
(Spanish)

Name: School:

I. NP NP-Pred (El es un niño.)
ADJ-Pred (La pelota es azul.)
ADV (La fiesta es a las cinco.)
NP:Subj VP-estar ADJ
(El agua está fría.)

II. NP:Subj VP_i (Ella está aquí.)
(Ellos corren bien.)

III. NP:Subj VP^t Object
(Ellos toman agua.)
(Ellos la quieren.)

IV. NP:Subj VP_t NP:DO para NP
a
(El dió el libro a Juan.)
(El le dió el libro a Juan.)
(El se lo dió.)
(Su nombre se me olvidó [a mí].)

V. NP:Subj VP_{tc} Comp (NP:DO)
a. (Ellos eligieron presidente a Juan.)
b. (Ellos lo eligieron presidente.)
c. (Ellos creían bonita a María.)
d. (Ellos la creían bonita.)
e. (Yo vi a los hombres correr.)
f. (Yo vi correr a los hombres.)
g. (Yo los vi correr.)
h. (Yo escuché al hombre leer el libro.)
i. (Yo lo escuché leer.)
j. (Yo permití al niño leerlo.)
k. (Vi a los hombres corriendo.)
l. (El quiere ir.)
m. (El debe tomar cerveza.)
n. (El viene llorando.)
o. (Voy a salir.)

VI. Hay NP_{indef} (ADV)
a. (Hay un señor afuera.)
b. (Hay mucho que hacer.)
c. (Hay que salir.)

VII. Transformations:
- a. Negation
- b. Interrogative
- c. Imperative Affirmative
  - Negative
- d. Passive
- e. Subjunctive

VIII. Fragments:
- a. One-Word Utterance
- b. Functionally Complete Sentence
- c. Functionally Incomplete Sentence

IX. Loan Words:
- a. Spanish
- b. English
- c. Hispanicized English Words

X. Non-standard Subject-Verb Agreement or Verb Usage

XI. Adjectival Usage

XII. Notes:

Compound Sentences:

Complex Sentences:

Direct/Indirect Quotations:

CODING FOR THE ANALYSIS OF THE SPONTANEOUS LANGUAGE SECTION - LCT

(For English Basic Sentences)

NP:Subj	-- Noun phrase as subject, including pronouns.
VP-be	-- Verb phrase with be as its main element.
NP:Pred	-- Noun phrase as predicate.
ADJ:Pred	-- Adjective as predicate.
ADV	-- Adverb - single word or phrase.
VP_i	-- Verb phrase intransitive - no object.
VP_t	-- Verb phrase transitive - has an object.
PRT	-- Particle - Ex.: up, in, out.
VP_t + PRT	-- Ex.: Look up, take in.
NP:DO	-- Noun phrase as direct object.
VP_{io}	-- Verb phrase with indirect object.
NP:IO	-- Noun phrase as indirect object.
NP:DO	-- Noun phrase as direct object.
VP_{tc}	-- Verb phrase transitive with complement.
Comp	-- Complement, a nominalized verb phrase.
VP-say	-- Verb phrase that requires for to introduce complement.
VP_{nf}	-- Verb phrase non-finite (unmarked tense).
There	-- "Anticipatory" there, not adverb meaning "in that place."
NP_{indef}	-- Noun phrase indefinite (i.e., without definite article).

CODING FOR THE ANALYSIS OF THE SPONTANEOUS LANGUAGE SECTION - LCT

(For *Spanish* Basic Sentences)

NP:Subj -- Noun phrase as subject, including pronouns.

VP-ser -- Verb phrase containing *ser* as the main element.

VP-estar -- Verb phrase containing *estar* as the main element.

NP:Pred -- Noun phrase as predicate.

ADJ:Pred -- Adjective as predicate.

ADV -- Adverb.

VP_i -- Verb phrase intransitive.

VP_t -- Verb phrase transitive.

NP:DO -- Noun phrase as direct object.

$Pron_1$ -- Pronoun in direct object form.

A + NP -- Adverb of interest.

$Pron_2$ -- Pronoun form which replaces the adverb of interest.

$Pron_3$ -- Only one form - *se*, replacing $Pron_1$ or $Pron_2$.

VP_{tc} -- Verb phrase transitive capable of being followed by a nominalized verbal as complement.

NP:Comp -- Noun phrase as complement.

$VP_{i\text{-}inf}$ -- Intransitive verb phrase, the verb in its inf. form.

$VP_{t\text{-}inf}$ -- Transitive verb phrase, the verb in its inf. form.

$VP_{\text{-}ndo}$ -- Verb phrase in the -*ndo* form.

Rel -- Relator-preposition or que.

ROTATED FACTOR LOADINGS FOR LCT FACTOR SCORES IN SPANISH ADMINISTRATION (PRE-DATA)[a]

LCT Variables	Factor					
	1	2	3	4	5	6
1 Basic Sentence of Pred. Nom./Adj. Type	.04	-.32	.19	-.71[b]	.02	-.01
2 Basic Sentence w/Intrans. Verb Constr.	.12	-.47	.45	-.22	-.41	-.22
3 Basic Sentence w/Trans. Verb + DO	.59	-.48	-.01	-.15	-.23	-.20
4 Basic Sentence w/Trans. Verb + DO/IO	.16	-.07	.41	-.13	-.11	.64[b]
5 Basic Sentence w/Trans./Intrans. Verb w/Comp.	.76[b]	-.04	.29	-.29	-.24	.06
6 Basic Sentence of Indefinite Type	.21	-.10	.69[b]	.04	-.03	.07
7 Negative Transformation	.60[b]	-.34	-.23	-.06	-.21	.09
8 Interrogative Transformation	.85[b]	-.02	.07	-.01	-.35	.06
9 Imperative Transformation	.84[b]	.01	.27	-.05	.11	.25
10 Passive Transformation	.35	.27	.26	-.53	-.06	-.05
11 Subjunctive Transformation	.20	-.45	-.30	-.28	.39	-.08
12 One-Word Utterance	-.04	.12	.22	.71[b]	.05	-.35
13 Functionally Complete Sentences	-.13	.05	.07	.52	.08	.44
14 Functionally Incomplete Sentences	.27	-.01	.02	-.01	-.08	.70[b]
15 Spanish Loan Words	--	--	--	--	--	--
16 English Loan Words	.10	-.11	.76[b]	-.03	.08	.14
17 Hispanicized English Words	--	--	--	--	--	--
18 Verb Usage	.12	-.14	-.05	-.04	-.85[b]	.12
19 Adjectival Usage	-.05	-.84[b]	.21	-.05	-.06	.12
20 Compound Sentences	.46	-.63[b]	.17	-.25	-.19	.13
21 Complex Sentences	.84[b]	-.07	.09	-.01	.21	-.00
22 Direct Quotations	.88[b]	-.12	.16	-.07	.02	.24

[a] N = 85

[b] Only rotated factor loadings with values of .60 or greater were considered to name a factor.

ROTATED FACTOR LOADINGS FOR LCT FACTOR SCORES IN ENGLISH ADMINISTRATION (PRE-DATA)[a]

LCT Variables	Factor					
	1	2	3	4	5	6
1 Basic Sentence of Pred. Nom./Adj. Type	.01	.08	-.73[b]	.18	.08	-.18
2 Basic Sentence w/Intransitive Verb	.29	.26	-.28	.02	.40	-.19
3 Basic Sentence w/Transitive Verb	.77[b]	.21	-.17	-.10	.23	-.32
4 Basic Sentence w/DO and IO	.24	.29	.13	-.71[b]	.16	-.34
5 Basic Sentence w/Trans./Intrans. Verb w/Comp.	.85[b]	.05	.01	.04	.20	-.08
6 Basic Sentence of Indefinite Type	.02	-.02	-.67[b]	.05	.30	.06
7 Negative Transformation	.25	.06	.07	-.03	.17	-.78[b]
8 Interrogative Transformation	.16	-.07	-.14	-.09	.78[b]	-.01
9 Imperative Transformation	.10	.05	-.09	-.11	.74[b]	-.16
10 Passive Transformation	.01	.94[b]	.00	.01	-.03	-.07
11 Subjunctive Transformation	.06	.59	-.01	-.08	.01	.00
12 One-Word Utterance	-.18	-.01	.55	.32	.20	.01
13 Functionally Complete Sentence	.48	-.10	.26	.15	.01	.51
14 Functionally Incomplete Sentence	.73[b]	-.11	.11	-.21	-.26	-.16
15 Spanish Loan Words	--	--	--	--	--	--
16 English Loan Words	-.07	-.00	-.03	-.02	-.08	-.05
17 Hispanicized English Words	--	--	--	--	--	--
18 Verb Usage	.25	-.19	-.29	-.21	-.30	-.53
19 Adjectival Usage	.75[b]	-.02	-.29	.07	.26	-.05
20 Compound Sentences	.62[b]	.20	-.12	-.50	.22	-.31
21 Complex Sentences	-.06	-.07	.01	-.88[b]	.10	.05
22 Direct Quotations	.40	.01	.10	-.12	.53	-.59

[a] N = 85

[b] Only rotated factor loadings vith values of .60 or greater were considered to name a factor.

ROTATED FACTOR LOADINGS FOR LCT FACTOR SCORES
IN SPANISH ADMINISTRATION (POST-DATA)^a

LCT Variables	Factor					
	1	2	3	4	5	6
1 Basic Sentence of Pred. Nom./Adj. Type	.44	.04	-.19	.51	-.40	-.01
2 Basic Sentence w/Intrans. Verb Constr.	.83^b	.06	-.25	.21	.00	.00
3 Basic Sentence w/Trans. Verb + DO	.17	.35	-.19	.68^b	-.28	-.11
4 Basic Sentence w/Trans. Verb + DO/IO	.20	.28	-.20	.29	-.05	-.67^b
5 Basic Sentence w/Trans./Intrans. Verb w/Comp.	.18	.43	-.15	.20	-.10	.62^b
6 Basic Sentence of Indefinite Type	.44	.08	.01	.07	-.47	-.46
7 Negative Transformation	-.03	.54	-.07	.55	.22	.26
8 Interrogative Transformation	-.03	.67^b	-.04	.37	-.03	-.05
9 Imperative Transformation	-.05	.88^b	.01	-.11	.01	-.07
10 Passive Transformation	.78^b	-.08	.02	-.09	.06	-.01
11 Subjunctive Transformation	.05	.16	-.09	.75^b	.12	-.05
12 One-Word Utterance	-.03	-.03	.78^b	-.06	.17	-.08
13 Functionally Complete Sentence	-.19	.05	.78^b	-.38	.14	-.05
14 Functionally Incomplete Sentence	-.07	-.07	.70^b	.03	-.19	.17
15 Spanish Loan Words	--	--	--	--	--	--
16 English Loan Words	--	--	--	--	--	--
17 Hispanicized English Words	--	--	--	--	--	--
18 Incorrect Verb Usage	-.05	.10	-.08	.10	-.82^b	.02
19 Adjectival Usage	.27	-.06	-.05	.80^b	-.28	-.03
20 Compound Sentences	.70^b	.02	-.05	.36	-.23	-.08
21 Complex Sentences	.56	.49	-.13	.33	.17	-.19
22 Direct Quotations	.13	.82^b	.00	.12	-.32	.05

[a] N = 64

[b] Only rotated factor loadings with values of .60 or greater were considered to name a factor.

ROTATED FACTOR LOADINGS FOR LCT FACTOR SCORES
IN ENGLISH ADMINISTRATION (POST-DATA)[a]

LCT Variables	Factor					
	1	2	3	4	5	6
1 Basic Sentence of Pred. Nom./Adj. Type	.73[b]	-.07	.13	.00	-.37	-.05
2 Basic Sentence w/Intrans. Verb Constr.	.52	.09	.12	.46	-.32	.48
3 Basic Sentence w/Trans. Verb + DO	.75[b]	.30	.03	.18	-.13	.07
4 Basic Sentence w/Trans. Verb + DO/IO	.09	-.11	.15	.74[b]	-.21	-.07
5 Basic Sentence w/Trans./Intrans Verb w/Comp.	.24	.01	.82[b]	-.07	-.09	-.05
6 Basic Sentence of Indefinite Type	.46	-.36	.43	.01	-.07	-.07
7 Negative Transformation	.45	.55	-.01	.16	-.17	-.08
8 Interrogative Transformation	.28	.74[b]	-.21	-.07	-.00	.04
9 Imperative Transformation	.07	.55	.64[b]	.19	.14	-.04
10 Passive Transformation	-.06	-.04	-.04	-.08	-.06	.92[b]
11 Subjunctive Transformation	-.04	.05	-.11	.79[b]	.06	.01
12 One-Word Utterance	-.14	-.01	-.06	-.00	.87[b]	-.02
13 Functionally Complete Sentence	-.14	-.06	-.03	-.14	.84[b]	-.10
14 Functionally Incomplete Sentence	-.03	.06	-.07	-.00	.12	.08
15 Spanish Loan Words	--	--	--	--	--	--
16 English Loan Words	--	--	--	--	--	--
17 Hispanicized English Words	--	--	--	--	--	--
18 Incorrect Verb Usage	.46	.07	-.59	-.12	-.19	-.15
19 Adjectival Usage	.01	-.07	.18	-.12	.07	-.19
20 Compound Sentences	.83[b]	.26	-.08	-.05	-.07	.07
21 Complex Sentences	.71[b]	.30	.03	.21	-.08	.34
22 Direct Quotations	-.02	.82[b]	.18	-.11	-.04	-.01

[a] N = 64

[b] Only rotated factor loadings with values of .60 or greater were considered to name a factor.

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